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# BUTTERFLIES

FROM

CHINA, JAPAN, AND COREA.

BY

JOHN HENRY LEECH, B.A., F.L.S., F.Z.S., F.E.S., ETC.

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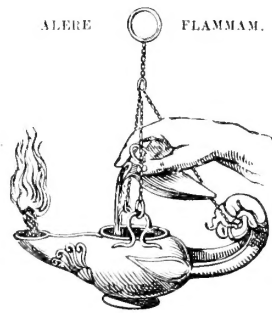
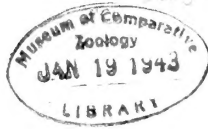
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THIS WORK IS GRATEFULLY DEDICATED

TO

MY MOTHER,

WHO HAS ALWAYS ENCOURAGED ME TO STUDY

ENTOMOLOGY.



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\* These illustrations are added to give some idea of the character of the collecting-grounds.



# P R E F A C E.



THE object of this work is to assist Entomologists to identify Rhopalocera that they may obtain from the regions dealt with. With this end in view the Author has employed the last eight years in acquiring and working out collections from Eastern Asia, and in making himself acquainted with the work of previous authors on the subject. It is a matter of regret that, owing to an almost complete absence of information respecting habits and life-histories of the majority of the species, the work is, unfortunately, less complete than the Author could have wished.

Unless found too unwieldy, the original description of each species, if sufficiently comprehensive, is given intact, and, as a rule, it has not been deemed advisable to translate those written in a foreign language, as such descriptions may often convey different impressions to different translators.

Expense alone has deterred the Author from figuring all the species dealt with, but all the new ones, and, with very few exceptions, all those not previously well-figured in works easy of access, have been represented.

The Classification adopted in this work is a modification of that generally in use at the present time in this country. Several new genera will have to be created for the reception of some of the species which the Author (preferring to leave the work to abler hands) has provisionally placed in genera to which they appeared to be most closely allied. As the genus *Papilio* has not

yet been thoroughly revised, it has not been deemed advisable to make use of the subdivisions at present indicated. Mr. E. Y. Watson's valuable classification of the Hesperiidæ has been adopted in this work as far as it goes. It is unfortunate, however, that such able work should have been restricted to the limited material dealt with. A really comprehensive classification of Diurnal Lepidoptera, based on sound structural characters, is much needed, and would be of the greatest service to Lepidopterists of every country. Amongst many Continental entomologists it seems the custom, whenever possible, to force every newly discovered species of butterfly occurring within Palæarctic limits into one of the genera they are in the habit of using for European species, however slight its affinities may be, even though it may belong to some well-known Oriental genus; its habitat would appear to be a sufficient reason for denying it its proper position.

In identifying species there is but one really satisfactory method, and that is by comparing them with the actual types. If this is not practicable, reference must be made to existing descriptions and figures. The former should be not only descriptive, but should also give comparisons with allied species, if there are any. Figures are of the greatest use, if accurate, and often save the entomologist much time and trouble; but they can never rank in importance with a good description, and some entomologists attach far too much importance to them. It often happens that the figure and description are taken from different specimens, and in such cases the former may not quite agree with the latter. Sometimes, as has been referred to in this work, an author, who especially prides himself on the accuracy of his plates, figures the same unique specimen twice with important differences. Mistakes are much more usual in hand-coloured plates than in those printed in colours, if well executed. If the publication of descriptions of new species were dependent on their being accompanied by accurately-coloured figures, the science of Entomology would be indefinitely retarded, and the naming of new species restricted to



those few entomologists possessing the wealth and opportunities necessary, to the exclusion of a vast majority of able naturalists not so fortunately situated.

The word "Entomology" conveys various meanings to its different votaries, but a pleasant one to all. Some entomologists form collections, whilst others do not. Among the former several methods are pursued:—There is the simple accumulator or entomological miser, who often knows but little of the subject, but nevertheless appears to derive much satisfaction from the possession of a mass of material of a certain pecuniary value but of little or no scientific use whatever. There is also the collector who cares nothing for specimens he has not taken himself or for species with whose habits he is not acquainted. This last class of collectors, amongst whom many artisans are to be found, often restrict their work to the fauna of their own immediate neighbourhood, with the result that they frequently make discoveries of the greatest interest concerning the habits and life-histories of local species. Other entomologists confine their attention to the elucidation of the more abstruse biological problems, such as the protective resemblance of insects to their environment, the effects and influence of climatic differences on variation, &c.

The study of the comparative anatomy of Lepidoptera is at present attracting much deserved attention, and the results of this line of investigation are found to be of great value in extending our knowledge of the limits of both genera and species, but until more is known of the subject a certain amount of caution should be exercised in the acceptance of many of the conclusions arrived at. To attain anything like definite knowledge in any branch of Entomology a large mass of material with correct data is necessary, and, in the Author's opinion, the most useful class of entomological worker at the present time is the field-collector, who not only exhibits activity and intelligence in his work, but carefully observes anything of interest connected with his captures and duly enters all such items of information in his notebook.

The series of variable species retained in most collections are much too short—among the varieties the specimens most distinct from the typical form being, as a rule, the only ones preserved, the more interesting, and often much rarer, intermediate forms or links being discarded. As a rule, a named variety or a local form is not constant, and a form occurring in one country as an occasional variety may be the dominant form in another country: e. g. *Colias edusa*, var. *helice*, is much more plentiful in the Canary Isles than the typical female; and in China the var. *valezina* of *Argynnis paphia* is the common form of female, while in Japan an intermediate form of this sex alone is met with. The importance of long series of variable species, with correct data, from different localities cannot be over-estimated, and the absence of such series for comparison has no doubt led to the naming of so many bad species.

Field-work appeals to most entomologists as a recreation, or, it might almost be said, as a form of sport. It affords the busy professional or commercial man an opportunity of enjoying an interesting and exciting pursuit amidst attractive natural surroundings. To sportsmen of leisure, among whom are many entomologists, it offers an occasion for profitably employing the interval between the hunting- and shooting-seasons.

Many Lepidoptera are exceedingly difficult to capture, and to obtain them great perseverance and dexterity are requisite. The most sporting butterfly known to the author is *Parnassius charltonius*. His first acquaintance with this species was in 1887 on the Skoro-la Pass, amongst the glaciers of Baltistan in the N.W. Himalayas, at an altitude of about 18,000 feet. At that time the species was very rare in collections, and on first observing it the Author and Mr. de Nicéville, who accompanied him, determined at once to procure a good series at any price. The ground was very badly adapted for forming a camp, but after a little searching a more or less level spot was found on which the coolies were set to work digging away the mountain side, and by

evening the little 8-foot tents were pitched. In the meantime two or three specimens not in the best of condition had been captured. *P. charltonius* has a powerful flight, soaring well out of reach, and not often settling, excepting on precipitous rocks. As any rapid progress was impossible at such an elevation, owing not only to the rarefied atmosphere, but also to the precipitous nature of the locality frequented by the butterfly, where a slip would have proved fatal, the object in view appeared almost unattainable; the following day, however, by carefully observing the flight of the insects it was discovered how they were to be circumvented. The day was bright and the sun very powerful, but at short intervals squalls of snow and hail occurred; these squalls were not at all appreciated by *P. charltonius*, who promptly sought refuge in the shelter of the rocks. By marking them down at the commencement of a storm they could be successfully stalked if in an accessible position and brought to net. In this manner a nice long series was procured during the next day or two. *Parnassius epaphus* was very abundant at this spot, but it frequents the grass-slopes instead of the cliffs, travelling with a jerky flight close to the ground, and is very easy to take; here also *Colias eogene* was met with in considerable numbers, and a magnificent series of the female was taken, of which scarcely two specimens were alike and all differed from any examples obtained from other localities.

In conclusion, I have to thank the many entomologists whose advice and assistance have rendered the compilation of this work much less arduous than it otherwise would have been.

J. H. LEECH.

January 1894.



AINU BUCKLE OF WOOD. (Kurile Islands.)

# SYSTEMATIC LIST

OF

## FAMILIES, SUBFAMILIES, GENERA, AND SPECIES.

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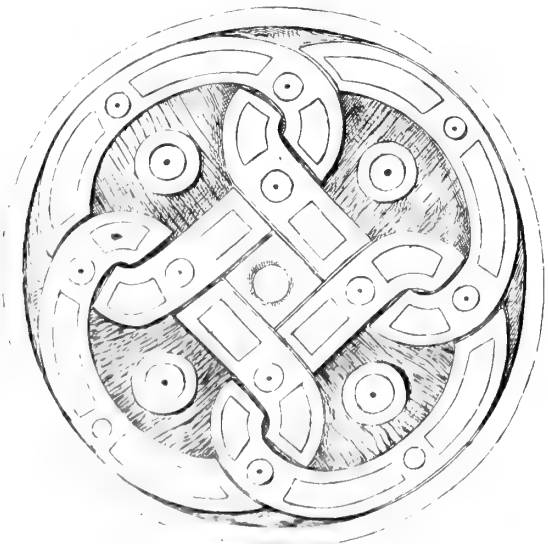
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AINU BUCKLE OF WALRUS-BONE. (Kurile Islands.)





Hanhart imp

W Farkiss del. et. lith

SCENERY ON THE UPPER YANG-TZE



# INTRODUCTION.

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LITTLE of any importance appears to have been written on the Lepidoptera of China and Japan prior to the year 1853, and of the species described as from China anterior to that date many were undoubtedly from the southern portion of the country and do not, therefore, fall within the scope of the present work.

Considering that Europeans have resided in different parts of China for so many years, it is a matter of great surprise that so few of them seem to have devoted their attention to the Entomology of the country. The first really important work is that of Bremer and Grey, entitled 'Beiträge zur Schmetterlings-Fauna der nördlichen China's,' published in St. Petersburg, 1853. In this work there is a list of the species of Lepidoptera collected by Tatarinoff and Gaschkevitsch near Peking, including some new to science; a few of these are figured in the work quoted, and others by Ménétriés in 'Enumeratio Corporum Animalium Musei Imp. Acad. Scient. Petropolitanæ,' 1855-63 (generally quoted as "Cat. Mus. Petr."). In 1862, Felder contributed a valuable paper to the 'Wiener Entomologische Monatschrift,' entitled "Observationes de Lepidopteris nonnullis Chinæ centralis et Japoniæ," in which he enumerates the species collected by Dr. Muirhead in the neighbourhood of Ningpo and describes a number then new to science, several of which were subsequently figured in his 'Reise der Novara.' Oberthür commenced to deal with the fauna of Western and Northern China in the second part of his 'Etudes d'Entomologie,' which was published in the latter part of 1876.

Continuing the subject in parts 4, 6, 9, 11, 13, 14, 16, and 18, he has described and figured a large number of species (discovered by l'Abbé David, Mons. Biet, and others), and greatly extended our knowledge of the lepidopterous riches of those districts from which his material has been received. Poujade, Mabille, and Lucas have also described many species, several of which were captured by l'Abbé David. In 1877, W. B. Pryer published a list of Rhopalocera from the Provinces of Chekiang and Kiang-soo, in the 'Entomological Monthly Magazine' for that year. The new species in that collection were described by Moore and Butler. Grose Smith and Kirby have described and figured some new and rare species from Western China in their 'Rhopalocera Exotica.'

Alphéraky, in volume iii. 'Mémoires sur les Lépidoptères, rédigés par N. M. Romanoff' (quoted "Rom. sur Lép."), mentioned sixty-seven species of Rhopalocera, of which several were described by him as new, taken by G. N. Potanine on his journey through North China and Mongolia during the years 1884-86.

Although the country has only been comparatively recently opened up to Europeans, the lepidopterous fauna of Japan has been much more fully investigated than has that of China. In 1860, Motschulsky ('Études d'Entomologie') gave an account of a small collection of Lepidoptera made by Madame Gaschkevitch in Japan, five of the species included therein being described as new. De l'Orza, in 1869, published a list of seventy-five species of Lepidoptera which had been exhibited at the International Exhibition held in Paris in 1867. Some of these species he described as new, and others, as they have not since been received from Japan, were probably either incorrectly identified or had been received from some other country. In 1874, Murray communicated "Notes on Japanese Butterflies with descriptions of new genera and species," to the 'Entomologist's Monthly Magazine' for that year, and also gave a list of Japanese Butterflies in the same Magazine for 1876. Butler, in the 'Journal of the Linnean Society,' Zoology, 1862, gave a list of the Diurnal Lepidoptera collected by Whitely at Hakodate; and in 1878 contributed a paper to the 'Cistula Entomologica,' vol. ii., on the Butterflies collected by Fenton in Japan, in which he described several new

species. In 1881 ('Annals and Magazine of Natural History'), the same writer gave a list of 130 species collected by Maries in the neighbourhood of Nikko, Central Japan, many of which were described as new. In the 'Proceedings of the Zoological Society,' 1881, there is a paper by Butler on the Butterflies observed in Hokkaido [Yesso] by Fenton, and descriptions of some new species. Janson, in the 'Cistula Entomologica,' 1877, described the new species in the collection obtained by Jonas in Japan; and in 1878 he made some remarks, in the same volume, on Japanese Butterflies and described five new species. In 1883, H. Pryer published, in the 'Transactions of the Asiatic Society of Japan,' a catalogue of the Lepidoptera of Japan, in which 130 species of Rhopalocera are enumerated, and a supplement to this list was published in 1885. During the years 1886-1889 he produced his larger work entitled 'Rhopalocera Nihonica, a description of the Butterflies of Japan.' This volume is illustrated by ten plates, executed by native artists. In 1887, the present writer contributed an annotated "List of the Butterflies of Japan and Corea" to the 'Proceedings of the Zoological Society;' and in the same year Fixsen (Rom. sur Lép. iii.) wrote on a collection formed by Otto Herz in Western and Central Corea.

Elwes, in the 'Proceedings of the Zoological Society,' 1881, published a most important paper on the Butterflies of Amurland, North China, and Japan, in which he brought together, from various sources, all the information up to date of writing as to the distribution &c. of the species known to occur in these countries.

In addition to the works mentioned above, the following will be found of use to the student of the Rhopalocera of Eastern Asia:—

- 'Butterflies of India, Burmah, and Ceylon,' vol. i., by MARSHALL and DE NICÉVILLE; vols. ii. and iii., by LICNEL DE NICÉVILLE, 1882-1890 (other volumes to follow).
- 'Lepidoptera of Ceylon,' by F. MOORE, 1880.
- 'Lepidoptera Indica,' by F. MOORE, 1890-1893 (still in course of publication).
- 'Rhopalocera Malayana,' by W. L. DISTANT, 1882.

- ‘Schrenck’s Reisen und Forschungen im Amur-Lande,’ par E. MÉNÉTRIÉS, 1859.
- “Lepidopteren Ost-Sibiriens,” by BREMER. *Mém. Acad. Imp. Sci. de St. Pétersbourg*, 1864.
- “On Lepidoptera collected in Japan and Corea by Mr. W. Wykeham Perry,” by A. G. BUTLER. *Annals and Magazine of Natural History*, (5) ix. p. 13 (1882).
- “On Lepidoptera from Manchuria and the Corea,” by A. G. BUTLER. *Annals and Magazine of Natural History*, (5) xi. pp. 109–117, 278 & 279 (1883).
- And the standard works on European and Palæartic Rhopalocera.

In February 1887 I sent Mr. A. E. Pratt, whom I had previously employed to collect Lepidoptera for me in the Lebanon district of Syria, to China for the purpose of forming entomological collections throughout the valley of the Yang-tze-kiang.

About the middle of April of the year mentioned he commenced work at Kiukiang, which place is situated some 500 miles from the sea. Here he was fortunate in finding good accommodation among the Lu-shan hills, which lie about nine miles to the south of the town, and he remained in the district until August 4th, making extensive collections of Lepidoptera and Coleoptera. A list of the former will be found in the ‘Transactions of the Entomological Society of London’ for the year 1889. Ascending the Yang-tze he reached Ichang on August 14th. This town is situated on the left bank of the river and about 1100 miles from its mouth. On September 10th he embarked in a house-boat for the San-ya-tung Glen, at the entrance of the Ichang Gorge, arriving there the same day. Here he found the vegetation very rich and Lepidoptera and Coleoptera fairly plentiful. He returned to Ichang early in October. During the winter Mr. Pratt took the opportunity of exploring the surrounding country, with the view of discovering suitable collecting-stations for the following season; and on April 16, 1888, he left for Chang-yang, a mountainous district a few days’ journey to the south of Ichang, where he resided for four months, and, assisted by natives, made a very fine collection of insects.

The collections formed during the season of 1888 being of such a satisfactory character, I proposed to Mr. Pratt that he should proceed still further up the river, and finally arranged with him that he should spend two years in working up the insect fauna of Western China, penetrating as far as he possibly could in the direction of the Thibetan frontier. As it appeared to me to be beyond the capabilities of one entomologist to secure anything like a fairly representative collection of the insects occurring in this rich country, I engaged a well-known German collector, Mr. Franz Kricheldorff, to join Mr. Pratt in the expedition, giving him special instructions to devote his energies to the Lycænidæ, Hesperiidæ, and obscure Heterocera. Mr. Pratt being unable to find a native boat that fulfilled his requirements, had one specially constructed and fitted at Ichang, of which a full description and a photograph will be found in his book, 'To the Snows of Tibet through China.'

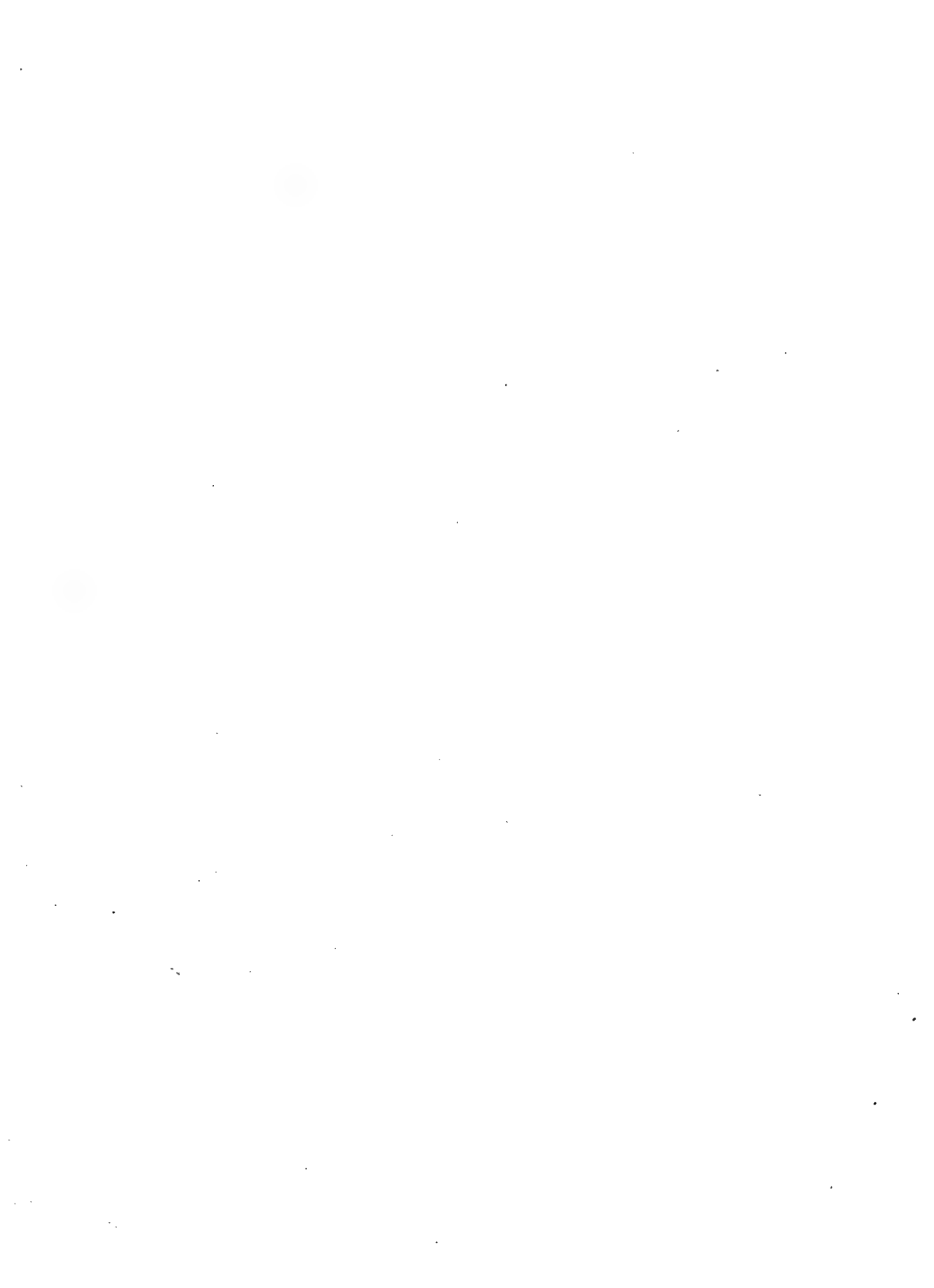
Kricheldorff had now arrived at Ichang, and the boat being ready, a start was made for the West on March 26th, 1889. Chung-king was reached on April 21st, and on May 6th they arrived at the confluence of the Min river, up which they proceeded to Chia-ting-fu, where the boat was left and some of the crew instructed to collect insects in the neighbourhood, whilst Pratt and Kricheldorff journeyed overland to Ta-chien-chih, a village at the foot of Wa-shan, at which place they arrived on May 26th. The weather was very changeable, with much rain towards the end of May. Finding that the district around Wa-shan was a good collecting locality, Pratt engaged thirty natives to form entomological collections, and left them to work the district whilst he went on to Ta-chien-lu, where he arrived on July 4th. On the 25th of July he visited Che-tou, a Thibetan hamlet situate to the west and distant about one day's journey; subsequently he made an expedition to the north of Ta-chien-lu, returning to that city on the 14th of August, leaving again next day on his way back to Ichang, at which town he arrived on September 19th, having made short halts at Wa-shan and Chia-ting-fu to pick up the natives' collections.

In 1890 they set out on their second voyage up the river to Western China on February 18th, reaching Chung-king on March 12th, and Chia-

ting-fu on April 7th. They stayed three days in the latter place and then marched on to Omei-shan, where they arrived on April 10th, and, having engaged a number of natives as collectors, continued their journey northwards along the course of the Ya river, passing through Kia-kiang and Ya-chow-fu, and thence southwards through Yung-ching-hsien and Ching-chi-hsien. Soon after leaving the latter place they proceeded in a northwesterly direction, reaching Ni-tou on April 23rd, and ultimately Ta-chien-lu on April 27th. On May 1st Pratt made a trip to the Snowy Mountains lying to the east of the city, returning again to Ta-chien-lu on the 10th. Kricheldorff had, in the meantime, started for Moupin, ten days' journey to the E. N. E. of Ta-chien-lu. On the 15th of May Pratt made an excursion to the Mo-si-mien mountains and established a collecting-station at Pu-tsu-fong, returning to Ta-chien-lu on June 14th. During the time he was in the mountains the weather was very cold and there were heavy falls of snow. Finding that his movements were so hampered by the local Mandarin, who objected to his collecting in the country beyond the immediate neighbourhood of the city, Pratt determined to leave Ta-chien-lu, which he accordingly did on the 21st of July, and made his way to Chia-ting-fu, which place he reached on August 2nd, but left it again on August 6th for Omei-shan, where he overhauled the collections made by the natives during his absence, and visited the lofty summit of Mount Omei, where he remained for ten days and secured some interesting Lepidoptera.

Kricheldorff arrived on August 8th at Chia-ting-fu from Moupin, where he had spent the summer, and, although much interfered with by the natives, had succeeded in amassing a very fine collection of Lepidoptera, the specimens being in beautiful condition. On the 18th of August he was rejoined by Pratt. By the 4th of September the natives had brought in their various captures, and when everything had been packed and carefully stowed away in the boat, a start was made for Ichang, at which place they arrived on September 25th, taking on board collections, made by natives in the province of Kwei-chow, on the way down.

I am indebted to Mr. Pratt for the following particulars respecting the





W. P. ...

...

SUMMIT OF OMEI-SHAN  
WESTERN CHINA



various collecting-stations, most of which are indicated on the map accompanying his work referred to above:—

### CENTRAL CHINA.

**KIUKIANG.**—The country in the neighbourhood of this town is flat, and the cultivation of rice is largely carried on. About nine miles S.S.W. are the Lu-shan hills. On the south side of the range there are pine-woods in places, and the northern portion of Lake Poyang reaches the foot of these hills. There are many small ravines, with a growth of underwood on their steep rocky sides. Among the wild flowers, lilies, wistaria, and red and white gardenias grow in luxuriant profusion. There are several temples in these hills, each surrounded by trees. In May and June the rainfall is very heavy.

**ICHANG.**—The district around this town is mountainous but barren; there are, however, a few clumps of bamboo in places. The climate is much the same as that of Kiukiang, but there is perhaps less rain.

**CHANG-YANG.**—This locality is about three days' journey south of Ichang. The country is mountainous, and intersected by gorges many hundred feet deep. The north sides of the mountains are clothed with dense virgin forest, but the southern slopes are principally covered with grass and small undergrowth. Pratt collected here in 1888, from April to August inclusive, at elevations ranging from 4000 to 6000 feet; and natives carried on the work during the following year, forming a very large collection.

**SHIP-Y-SHAN.**—A village about fifteen miles from Ichang, situated on the right bank of the river and at the upper extremity of the gorge.

### WESTERN CHINA.

**OMEI-SHAN.**—The collecting-station here was situated about halfway up the mountain at an elevation of 5000 feet and surrounded by subtropical vegetation—many species of fine trees and evergreen shrubs. From Chia-ting-fu, which is two days' distant, it is approached through a very fertile valley.

NI-TOU.—This is a small village four days' west of Wa-shan, about half-way between Wa-shan and Ta-chien-lu. The mountains surrounding this village are comparatively bare of vegetation of a wild character, but maize and different cereals are largely cultivated. There is, however, a rocky ravine of great extent, where indigenous plants are found.

WA-SHAN.—The country surrounding this mountain is rocky, and in parts there are large isolated knolls covered with trees and underwood. The mountain itself is covered on its southern slopes with forest.

CHIA-KOU-HO [CHIN-KOU-HO].—A small village one day's journey S.E. from the foot of Wa-shan, situated in a deep rocky gorge. It is a rich locality for insects, but is very hot and stormy in summer.

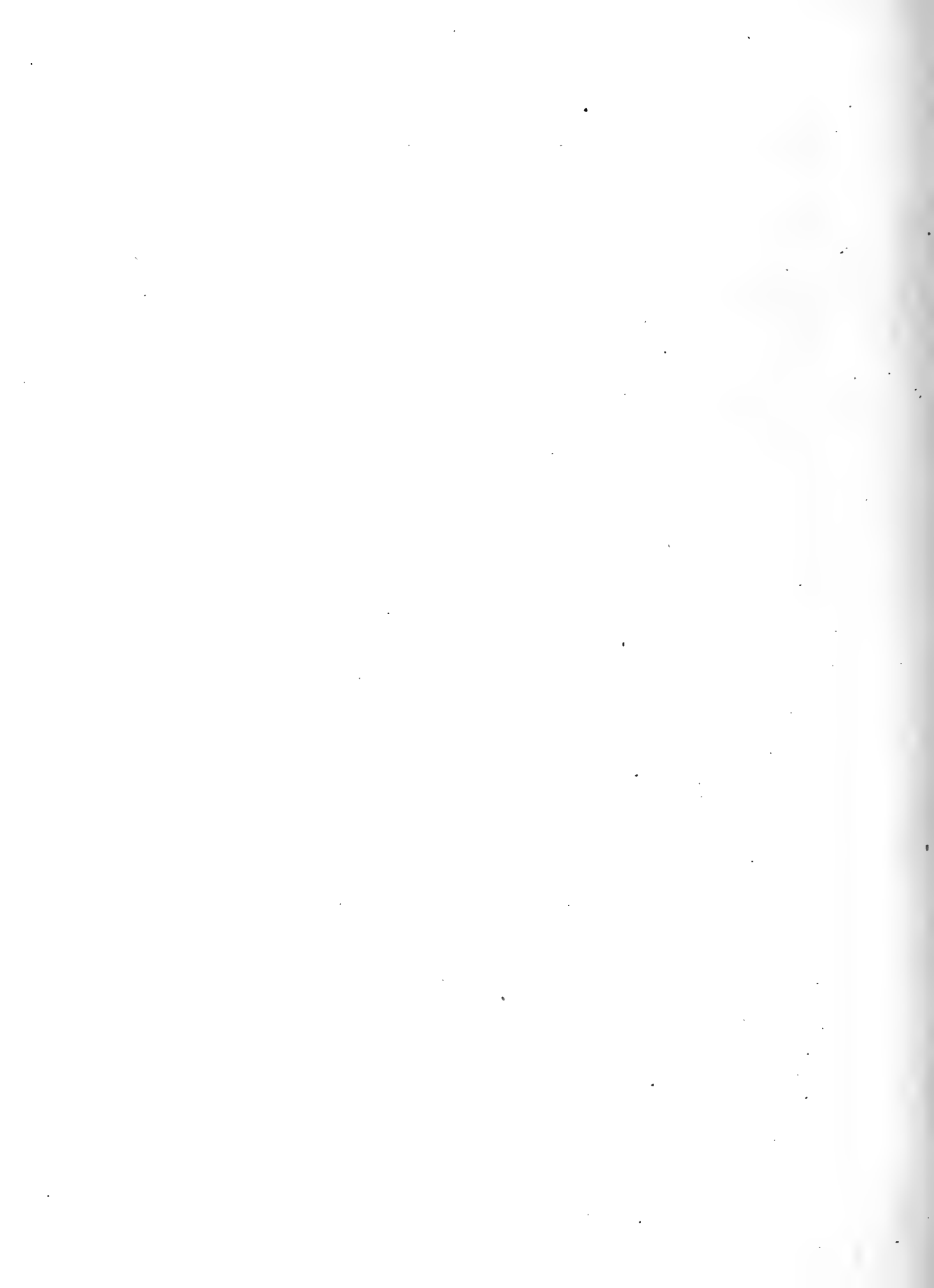
HUANG-MU-CHANG.—A scattered village one day's journey N.W. from Wa-shan. The surrounding country is undulating and largely under cultivation; but there are coverts of oak and other forest trees here and there, and also many species of trees and plants growing on the sides of the rocky ravines.

WA-SSU-KOW [WASSU].—A small village, nine hours' journey from Ta-chien-lu, situated in a fine gorge at the mouth of the small affluent which passes through Ta-chien-lu and discharges its waters into the river Tung. It stands at an elevation of 3900 feet above the level of the sea. The mountains in this district attain a great altitude, their summits and higher spurs being covered with perpetual snow, and glaciers may be seen when the valley is open. The lower heights are covered with pine-forest, and on the precipices in the immediate vicinity of the village grows a species of cactus similar to the "prickly pear."

TA-CHEN-LU.—Stands at an altitude of 8500 feet above the sea, and is surrounded by high mountains, which are very rugged and stony and comparatively destitute of vegetation. The whole district appears to have suffered greatly from destructive avalanches in former years.

CHE-TOU.—A group of Thibetan hamlets situate one day's journey S.W. from Ta-chien-lu. The mountains are covered, in parts, with grass and an abundance of flowers. There are pine-forests in the deep valleys.









PU-TSU-FONG.—There is only one hut at this place, which is situate on the Mo-si-mien Pass, two days' S.W. from Ta-chien-lu. It stands at an elevation of 7500 feet. The higher slopes of the mountains are covered with grass and lilies; the valley below is all forest. Another station in this district was the "Log-cabin" in the forest, towards the summit of the Mo-si-mien Pass, at an elevation of 12,000 feet. This forest consists of rhododendrons and pines, and is three days' from Ta-chien-lu.

How-kow.—A small group of hamlets, ten days' W. of Ta-chien-lu. It is placed in a valley, and, according to Bishop Biet, a river here is considered by the Chinese to be the eastern boundary of Thibet. In this locality a fine collection was made by natives.

A good deal of uncertainty exists concerning the exact boundary-lines of Western China and Thibet; but it is quite certain that all the localities visited by Pratt, Kricheldorff, and their collectors are situated in China proper. How-kow, which I previously considered to be in Thibet, is now said to be on the border-line. Mons. Oberthür has erroneously referred Ta-chien-lu and its neighbourhood, and also Mou-pin, to Thibet instead of China.

Besides the material accumulated by Pratt and Kricheldorff and the natives employed by them, valuable collections were sent to this country from time to time by the late Capt. Yankowsky, commander of one of the steamers plying on the Yang-tze-kiang, who had been taught by Pratt how to collect and preserve Lepidoptera. Before leaving Ta-chien-lu, Pratt, on my behalf, engaged natives to collect insects during 1891, and I received the results of their season's work at the end of that year. This collection proved of considerable interest, having been mainly obtained on the high plateaux near the Thibetan frontier. In the following year Mr. H. Grose Smith acquired, through Mr. Pratt, another consignment of Lepidoptera from Western China, which comprised a number of species apparently captured at moderate elevations, among which were several new to science which have subsequently been described in 'Rhopalocera Exotica.'

A short account of my own collecting experiences in China, Japan, and

Corea in 1886 may be of some use to entomologists thinking of visiting those countries. I commenced work at Foochau at the beginning of April, and found insect-life of all kinds most abundant. A friend very kindly lending me his house-boat, I was enabled to explore the Yuen-fu and Min rivers, changing my collecting-ground every day. This is by far the most pleasant mode of collecting known to me; surrounded by every luxury, with all one's apparatus handy, without any packing or unpacking to trouble one, an entomologist has nothing to prevent his devoting his whole time to his work.

The country about Foochau is exceedingly beautiful and of a hilly character. Vegetation is very luxuriant and almost of a tropical nature, and, as might be expected, the Lepidoptera exhibit but few Palæartic affinities. It is to be regretted that, considering the large number of resident Europeans in Foochau, so little is known of its Lepidopterous fauna, which must certainly be very rich.

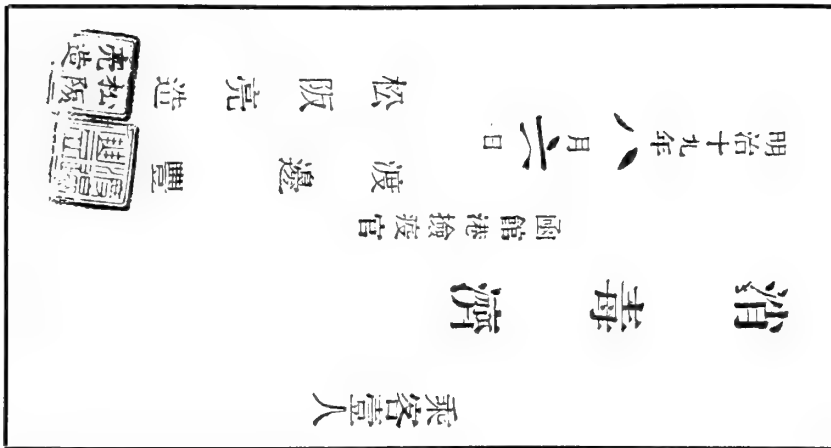
Thinking the season sufficiently advanced, I moved further north and spent a week or so in the Snowy Valley, near Ningpo, which had proved such a rich collecting locality to Mr. W. B. Pryer. The valley derives its name from the number of cascades, some of great height, which it contains. Comfortable quarters are to be had in a large Buddhist monastery and temple, which forms a good centre for collecting. It is situated at a considerable elevation among the hills, and is surrounded by woods (mostly of fir) and bamboo-jungles. The steep slopes of the hills are covered with scrub, azalea and wistaria being very plentiful. I was rather too early for this locality, and the results were not so satisfactory as I expected; but I employed a native collector to work here later in the season, and he met with greater success.

Towards the end of April I proceeded to Japan, landing at Nagasaki, where I found Lepidoptera plentiful wherever an accessible piece of uncultivated ground was to be met with. This is only the case on hill-sides too steep for cultivation; and it is wonderful to see the way in which the hills are cut into steps, supported by huge banks and walls, and kept constantly irrigated by small streams of water, especially in the south. Where a good piece of forest occurs it is generally almost impenetrable, on account of the dense undergrowth



of bamboo-grasses, ferns, and other plants. This sort of collecting-ground occurs in most parts of the main and southern islands of Japan, and when accompanied with alternate intervals of tropical rain and tropical sunshine renders an entomologist's pursuits somewhat arduous. Through the help of influential friends I was here enabled to obtain a small native-built schooner, in which I explored the islands and the western and southern coasts of Kiushiu with satisfactory results.

Returning to Nagasaki, I left the schooner and proceeded to Corea early in June. The first place of call was Fusan: here for the first time I fell in with that scourge, the cholera, which, although I escaped contagion, from



FACSIMILE OF CHOLERA CERTIFICATE,  
stating that the Author has been duly disinfected, Hakodate, Aug. 1886.

this time dogged my footsteps; and I may say that during the following two months I was quarantined and fumigated almost from one end of Japan to the other, which naturally interfered a good deal with collecting as well as personal comfort. At Fusan I managed to avoid the quarantine by means of a native boat, which landed me on Deer Island, out of sight of the town, and where I had a splendid day's collecting. This is a beautiful place, well wooded and watered, and very little cultivated.

Continuing my journey I reached Gensan on the N.E. coast, where I spent the remainder of the month. It was a great relief to reach a country where rice was not grown, or only in very small quantities. In the neighbourhood

of the sea the ground is hilly and covered with very low scrub, mostly dwarf-oak, seldom exceeding a foot in height and with enormous leaves, azaleas, ferns, chiefly bracken and osmunda, the latter very small, and wild briars; the most conspicuous flowers were tiger-lilies, irises, and spiræas, all very abundant: here and there a sheltered ravine was met with, containing a few trees and with a stream running through it; these spots were a perfect paradise to a collector. The reason of the bareness of the coast-hills is owing to the fact that the natives cut the scrub for fuel every autumn. At a distance of about fifteen miles from the sea are mountains, which attain a height of four to five thousand feet, and are densely wooded almost to their summits, some of the timber being very fine. From the summit of So-ko-san, the highest peak in the neighbourhood, the view consists of a sea of wooded mountains, except near the coast, with scarcely a house or sign of cultivation. The natives are harmless and good-natured, but dirty to an incredible degree. Travelling is difficult on account of the money, which is all copper and of such a low value, that one man can only carry a few shillings' worth; scarcely any food is procurable, and the native habitations are too lively even for an entomologist. The traveller must make up his mind to live on what he can take with him, and to sleep in the open air or under the verandah of a temple. However, although living was rather rough and the weather bad, I was amply repaid for a little hardship by the results of my collecting. I decided to leave my assistant, Mr. Gaston Smith, who had so far accompanied me, to continue collecting in the neighbourhood of Gensan; he remained until nearly the end of July, making several short trips inland, and was very successful. I should recommend any one visiting this part of Corea to go provided with a complete camping outfit; it is a country that would repay the sportsman as well as the naturalist. At the end of June I returned to Nagasaki, again obtaining a good day's collecting on Deer Island, Fusan. Without delaying at Nagasaki, I proceeded at once to Skimonoseki, on the northern side of the straits of that name; there is some good collecting-ground in the neighbourhood, and less cultivation than in most parts of Japan. After a few days I continued my journey northward, my intention being to work my way to Yesso, as much as possible by land. This journey





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ABOVE NIKKO  
CENTRAL JAPAN

HAICAW. H. 2.

was uneventful, and the results did not repay me for the discomforts encountered, owing to the cholera and having to live almost entirely on Japanese food. The best localities were the neighbourhood of Nagahama on Lake Biwa, Tsuruga on the sea-coast, Kanazawa in Kaga, and Fushiki. I should have done far better if I had settled for a month in a good collecting-place among the mountains of Central or N.W. Japan.

The 5th of August found me at Hakodate, in the Island of Yesso. I at once proceeded to Lake Konuma, a short day's journey. This proved to be a beautiful collecting-place. There is a comfortable tea-house on the side of the lake, surrounded by forests composed of a great variety of trees and traversed in every direction by paths, and the mountain Koma-ga-take within easy reach. After a short stay I proceeded to Nemoro, on the east coast of Yesso, by sea; this proved a disappointing place for Lepidoptera, so I continued my journey in a small steamer to the Kurile Islands, visiting Shikotan, Iterup, and Urup. The entomological fauna of those islands proved very poor, and collecting there was arduous work, owing to the islands being almost entirely covered with a dense growth of trackless bamboo-grass; they are only inhabited by a few Ainus and colonies of Japanese, who spend part of the summer in fishing for salmon, of which there are almost incredible numbers. After the oil has been extracted from the fish in presses, the remains are used for manuring the rice-fields of Central Japan. A certain quantity of the fish is also smoked or canned for food.

Returning to Nemoro I made my way, mostly overland, to Hakodate. Taking another flying visit to Lake Konuma, I left Yesso and took ship for Sendai, on the east coast of Japan; from there I worked my way overland to Yokohama, arriving at my destination at the end of September; here I found my assistant, Mr. Smith, awaiting me. He had spent August and September collecting in the Fuji-yama and Nikko districts with considerable success.

After a few days I left Yokohama and spent three weeks on the usual tourist routes. Up to this time my travels had been through districts seldom or never traversed by Europeans, and I was not long in finding out the difference in treatment and prices from what I had been accustomed to up till

now. The frank welcome, not altogether unmixed with curiosity, was missing, and the proprietors of tea-houses were rapidly acquiring the ways of their Swiss brethren. The results of this last trip were naturally not of much importance, the season being so far advanced. During the entire summer I had succeeded in taking all the butterflies known to occur in Japan, with the exception of about six species, one new to science and several not previously known from that country, besides an enormous number of Heterocera and Coleoptera. I left the country in November, and thus ended my journey, taking with me many enjoyable reminiscences of a pleasant country and its bright and kindly inhabitants. I have to thank many Europeans I met in Japan for their great kindness and hospitality, especially the late Henry Pryer, whose untimely death deprived Japan of her foremost entomologist, and science of an indefatigable and careful field-naturalist.

Since my visit to Japan in 1886, the railway-system, which was then only in its infancy, has spread in every direction, as can be seen by the map accompanying this work, and travelling in that country will, in a few years, be as easy as it is in England. Many parts of Japan have never been entomologically worked, as, for instance, Central Kiushiu, Central and Northern Yesso. The whole of the northern portion of the main island, and also the Island of Shikoku, are practically unknown to entomologists, but will doubtless yield rich harvests in the near future.

The area dealt with in the present work includes the whole of that section of the Palearctic Region which Wallace has designated the Manchurian sub-region, with the exception of the Amurland district (which has been dealt with by Dr. Staudinger, *Röm. sur Lép. v.*), and excluding the western portion beyond the one hundred and first degree. Of the entomological fauna of the southern portion of this subregion absolutely nothing is known. Wallace describes the Manchurian subregion as follows:—

“This is an interesting and very productive district, corresponding in the east to the Mediterranean subregion in the west, or rather perhaps to all western temperate Europe. Its limits are not very well-defined, but it probably includes all Japan; the Corea and Manchuria to the Amour river

and to the lower slopes of the Kingan and Peling mountains; and China to the Nandin mountains south of the Yang-tze-kiang. On the coast of China the dividing-line between it and the Oriental region seems to be somewhere about Foo-chow; but as there is here no natural barrier, a great intermingling of northern and southern forms takes place.

“Japan is volcanic and mountainous, with a fine climate and a most luxuriant and varied vegetation. Manchuria is hilly, with a high range of mountains on the west, and some desert tracts in the interior, but fairly wooded in many parts. Much of Northern China is a vast alluvial plain, backed by hills and mountains with belts of forest, above which are the dry and barren uplands of Mongolia. We have a tolerable knowledge of China, of Japan, and of the Amour valley, but very little of Corea and Manchuria. The recent researches of Pèrè David in Moupin, in East Thibet, said to be between  $31^{\circ}$  and  $32^{\circ}$  north latitude, show that the fauna of the Oriental region here advances northward along the flanks of the Yun-ling mountains (a continuation of the Himalayas); since he found at different altitudes representatives of the Indo-Chinese, Manchurian, and Siberian faunas. On the higher slopes of the Himalayas there must be a narrow strip, from about 8000 to 11,000 feet elevation, intervening between the tropical fauna of the Indo-Chinese subregion and the almost arctic fauna of Thibet; and the animals of this zone will, for the most part, belong to the fauna of temperate China and Manchuria, except in the extreme west towards Cashmere, where the Mediterranean fauna will in like manner intervene. On a map of sufficiently large scale, therefore, it would be necessary to extend our present subregion westward along the Himalayas, in a narrow strip just below the upper limits of forests.” (Distrib. of Anim. i. p. 20.)



ANCIENT SWORD-HILT. (N.W. Japan.)



GEOGRAPHICAL DISTRIBUTION  
OF  
BUTTERFLIES

DEALT WITH IN THE PRESENT WORK.

[N., North; S., South; E., East; W., West; C., Central; ?, Uncertain.]

	Japan.	China.	Corea.	Anurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Caduga tytia</i> .....	N.S.C.	C.E.W.	..	*	*	..	..	Oriental Region.
„ <i>melaneus</i> .....	..	C.W.	..	..	*	..	..	Formosa.
<i>Tirumala septentrionis</i> .....	..	W.	..	..	*	..	..	Oriental Region.
<i>Danais chrysippus</i> .....	..	C.W.E.	..	..	*	..	*	Old World.
„ <i>genutia</i> .....	..	C.W.	..	..	*	..	..	E. Asia.
<i>Trepsichrois linnæi</i> .....	..	C.W.	..	..	*	..	..	Cachar.
<i>Salpinx vestigiata</i> .....	..	W.	..	..	..	..	..	Oriental Region.
<i>Mandarinia regalis</i> .....	..	C.W.	..	..	..	..	..	
<i>Mycalesis sangaica</i> .....	..	N.C.E.W.	..	..	..	..	..	
„ <i>mineus</i> .....	..	C.W.E.	..	..	*	..	..	Oriental Region.
„ <i>perdiccas</i> .....	C.S.	N.C.E.W.	*	..	?	..	..	
„ <i>gotama</i> .....	C.S.	N.C.E.W.	..	..	?	..	..	
„ <i>unica</i> .....	..	W.	..	..	..	..	..	
„ <i>misenus</i> .....	..	W.	..	..	*	..	..	Khasi Hills.
<i>Neorina patria</i> .....	..	W.	..	..	..	..	..	
<i>Pronophila schrenckii</i> .....	C.N.	W.	*	*	..	..	..	
<i>Lethe epimenides</i> .....	C.N.	C.W.	*	*	..	..	..	
„ <i>chandia</i> .....	..	C.W.	..	..	*	..	..	
„ <i>europa</i> .....	..	C.	..	..	*	..	..	{ India and Malay Peninsula.
„ <i>dyrta</i> .....	..	C.W.	..	..	*	..	..	Chin-Lushai.
„ <i>baucis</i> .....	..	C.W.	..	..	..	..	..	
„ <i>rohria</i> .....	..	C.W.E.	..	..	*	..	..	Cachar.
„ <i>verma</i> .....	..	W.	..	..	*	..	..	Siam.
„ <i>satyrina</i> .....	..	C.W.E.	..	..	..	..	..	
„ <i>butleri</i> .....	..	C.W.	..	..	..	..	..	

	Japan.	China.	Corea.	Amuriland.	Himalayas.	Tibet.	Europe.	Other Countries and Regions.
<i>Lethe marginalis</i>	C.N.	C.W.	*	*				
„ <i>lanaris</i>	.....	C.W.E.						
„ <i>helena</i>	.....	W.						
„ <i>hecate</i>	.....	W.						
„ <i>oculatissima</i>	.....	C.W.						
„ <i>diana</i>	S.C.N.	.....	*					
„ <i>dauidi</i>	.....	W.						
„ <i>laodamia</i>	.....	W.						
„ <i>christophi</i>	.....	C.W.						
„ <i>titania</i>	.....	W.						
„ <i>camilla</i>	.....	W.						
„ <i>trimacula</i>	.....	C.						
„ <i>proxima</i>	.....	W.						
„ <i>nigrifascia</i>	.....	C.W.						
„ <i>ocellata</i>	.....	W.						
„ <i>labyrinthea</i>	.....	C.W.						
„ <i>callipteris</i>	C.N.	.....						
„ <i>sicelis</i>	C.	W.	*					
„ <i>sicelides</i>	.....	W.						
„ <i>cyrene</i>	.....	C.						
„ <i>syrctis</i>	.....	C.E.W.						
„ <i>manzorum</i>	.....	C.W.						
„ <i>gemina</i>	.....	W.						
„ <i>violaceopicta</i>	.....	W.						
„ <i>cybele</i>	.....	W.						
„ <i>siderea</i>	.....	W.	..	..	*			
<i>Zophoessa gracilis</i>	.....	W.						
„ <i>jalaurida</i>	.....	W.	..	..	*			
„ <i>armandina</i>	.....	W.						
„ <i>helle</i>	.....	W.						
„ <i>proene</i>	.....	W.						
„ <i>albolineata</i>	.....	C.W.						
„ <i>argentata</i>	.....	W.						
„ <i>luteofasciata</i>	.....	W.						
„ <i>dura</i>	.....	C.W.	..	..	*			
<i>Neope yama</i>	.....	C.W.	..	..	*			
„ <i>christi</i>	.....	W.						
„ <i>simulans</i>	.....	W.						
„ <i>armandii</i>	.....	C.W.						
„ <i>bremeri</i>	.....	C.E.W.						
„ <i>oberthüri</i>	.....	W.						
„ <i>goshkevitschii</i>	N.C.S.	.....						
„ <i>pulaha</i>	.....	C.W.	..	..	*			
„ <i>agrestis</i>	.....	W.						
„ <i>muirheadii</i>	.....	C.E.W.						
<i>Rhaphicera satricus</i>	.....	W.	..	.	*			
„ <i>dumicola</i>	.....	C.W.						
<i>Callarge sagitta</i>	.....	C.W.						
<i>Melanargia halimede</i>	.....	N.C.E.W.	*	*				

	Japan.	China.	Corea.	Amurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Melanargia leda</i> . . . . .	....	W.	..	..	.	*		
<i>Pararge dumetorum</i> . . . . .	....	W.						
" <i>præusta</i> . . . . .	....	W.						
" <i>episcopalis</i> . . . . .	....	W.						
" <i>thibetanus</i> . . . . .	....	W.						
" <i>achine</i> . . . . .	N.C.	....	*	*	..	..	*	
" <i>catena</i> . . . . .	....	C.						
" <i>deidamia</i> . . . . .	N.C.	N.C.W.	*	*	..	*		
<i>Amecera majusecula</i> . . . . .	....	W.						
<i>Satyrus autonöe</i> . . . . .	....	N.W.	..	..	..	*	*	
" <i>dryas</i> . . . . .	N.C.	C.E.W.	*	*	..	*	*	
<i>Aulocera padma</i> . . . . .	....	W.	..	..	*			
" <i>loha</i> . . . . .	....	W.	..	..	*			
" <i>merlina</i> . . . . .	....	W.						
" <i>magica</i> . . . . .	....	W.						
" <i>sybillina</i> . . . . .	....	W.						
<i>Cœneis pumilus</i> . . . . .	....	W.	..	..	*	*		
" <i>mongolica</i> . . . . .	....	N.						
" <i>buddha</i> . . . . .	....	W.	..	..	..	*		
" <i>walkyria</i> . . . . .	....	....	*					
<i>Epinephele maculosa</i> . . . . .	....	C.						
" <i>arvensis</i> . . . . .	....	N.W.						
" <i>bieti</i> . . . . .	....	W.						
" <i>hyperanthus</i> . . . . .	....	....	?	*	..	..	*	
" <i>deiphobe</i> . . . . .	....	W.						
<i>Palæonympha opalina</i> . . . . .	....	C.E.W.						
<i>Ypthima elwesi</i> . . . . .	....	W.						
" <i>conjuncta</i> . . . . .	....	C.W.						
" <i>sakra</i> . . . . .	....	W.	..	..	*			
" <i>methorina</i> . . . . .	....	W.						
" <i>iris</i> . . . . .	....	W.						
" <i>ciris</i> . . . . .	....	W.						
" <i>beautei</i> . . . . .	....	W.						
" <i>insolita</i> . . . . .	....	W.						
" <i>megalomma</i> . . . . .	....	C.E.W.						
" <i>prænubila</i> . . . . .	....	C.W.						
" <i>obscura</i> . . . . .	....	....	*					
" <i>motschulskyi</i> . . . . .	S.	C.N.E.W.	*	*				
" <i>sordida</i> . . . . .	....	C.						
" <i>perfecta</i> . . . . .	....	C.W.						
" <i>multistriata</i> . . . . .	....	C.	..	..	..	..	..	Formosa.
" <i>chinensis</i> . . . . .	....	C.						
" <i>avanta</i> . . . . .	....	C.	..	..	*			
" <i>pratti</i> . . . . .	....	C.						
" <i>argus</i> . . . . .	N.C.S.	N.C.E.W.	*	*				
" <i>zodia</i> . . . . .	....	C.E.W.						
<i>Ragadia latifasciata</i> . . . . .	....	W.						
<i>Acerophthalmia thalia</i> . . . . .	....	W.						
<i>Cœnonympha œdipus</i> . . . . .	C.	N.	*	*	..	..	*	

	Japan.	China.	Corea.	Amurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Coenonympha hero</i> . . . . .	.. . .	.. . .	*	*	..	..	*	
" <i>amaryllis</i> . . . . .		N.	..	*	..	..		
" <i>semenovi</i> . . . . .		W.	..	*	..	*		
" <i>typhon</i> . . . . .		W.	..	*	..	..	*	
" <i>sinica</i> . . . . .		N.	..					
" <i>pavonia</i> . . . . .		N.	..					
<i>Erebia sedakovii</i> . . . . .	N.C.	W.	..	*	..	*		
" <i>herse</i> . . . . .		W.	..			*		
" <i>saxicola</i> . . . . .		N.	..					
" <i>ruricola</i> . . . . .		W.	..					
" <i>rurigena</i> . . . . .		W.	..					
<i>Callerebia phyllis</i> . . . . .		W.	..					
" <i>albipuncta</i> . . . . .		C.W.	..					
" <i>pratorum</i> . . . . .		W.	..					
" <i>bocki</i> . . . . .		W.	..					
" <i>carola</i> . . . . .		W.	..					
" <i>sylvicola</i> . . . . .		W.	..					
" <i>orixa</i> . . . . .		C.W.	..	..	*			
<i>Melanitis leda</i> . . . . .	C.S.	C.W.	*	..	*	..	..	Oriental Region.
" <i>aswa</i> . . . . .		W.	..	..	*			
<i>Enispe lunatus</i> . . . . .		W.	..	..				
<i>Clerome aerope</i> . . . . .		C.W.	..	..				
<i>Stichopthalma howqua</i> . . . . .		C.E.W.	..	..				
" <i>neumogeni</i> . . . . .		W.	..	..				
<i>Pareba vesta</i> . . . . .		C.W.	..	..	*			
<i>Isodema adcima</i> . . . . .		C.E.W.	..	..				
<i>Calinaga davidis</i> . . . . .		C.W.	..	..				
" <i>lhatso</i> . . . . .		W.	..	..				
<i>Cethosia biblis</i> . . . . .		C.W.	..	..	*	..	..	Oriental Region.
<i>Kallima inachis</i> . . . . .		C.W.	..	..	*	..	..	Chin-Lushai.
<i>Charaxes polyxena</i> . . . . .		W.	..	..	*			
" <i>narcæus</i> . . . . .		C.E.W.	..	..				
" <i>posidonius</i> . . . . .		W.	..	..				
" <i>rothschildi</i> . . . . .		W.	..	..				
<i>Hypolimnas bolina</i> . . . . .		W.	..	..	*	..	..	Oriental Region.
<i>Dichorragia nesimachus</i> . . . . .	C.	W.	..	..	*			
" <i>nesscus</i> . . . . .		W.	..	..				
<i>Stibochiona nicea</i> . . . . .		W.	..	..	*	..	..	Cachar.
<i>Euthalia confucius</i> . . . . .		C.W.	..	..				
" <i>kardamir</i> . . . . .		C.W.	..	..				
" <i>sahadeva</i> . . . . .		W.	..	..	*			
" <i>pyrrha</i> . . . . .		W.	..	..				
" <i>pratti</i> . . . . .		C.W.	..	..				
" <i>thibetana</i> . . . . .		C.W.	..	..				
" <i>irrubescens</i> . . . . .		W.	..	..				
" <i>hebe</i> . . . . .		C.W.	..	..				
" <i>strephon</i> . . . . .		W.	..	..				
" <i>omcia</i> . . . . .		W.	..	..				
" <i>consobrina</i> . . . . .		W.	..	..				

	Japan.	China.	Corea.	Amurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Hestina nama</i> .....	....	W.	..	..	*	..	..	Oriental Region.
„ <i>assimilis</i> .....	....	C.E.W.	*	..	..	..	..	
„ <i>mena</i> .....	....	C.W.	..	..	*	..	..	
„ <i>subviridis</i> .....	....	W.	..	..	..	..	..	
„ <i>japonica</i> .....	N.C.S.	C.W.	..	..	..	..	..	
„ <i>oberthuri</i> .....	....	C.W.	..	..	..	..	..	
<i>Euripus charonda</i> .....	C.	C.W.	*	..	..	..	..	
„ <i>funeris</i> .....	....	W.	..	..	..	..	..	
<i>Sephisa princeps</i> .....	....	C.W.	*	..	..	..	..	
<i>Heleyra superba</i> .....	....	W.	..	..	..	..	..	
<i>Apatura schrencki</i> .....	....	..	*	*	..	..	..	
„ <i>chevana</i> .....	....	C.W.	..	..	*	..	..	
„ <i>nycteis</i> .....	....	..	*	*	..	..	..	
„ <i>subcarulea</i> .....	....	W.	..	..	..	..	..	
„ <i>pallas</i> .....	....	W.	..	..	..	..	..	
„ <i>subalba</i> .....	....	C.W.	..	..	..	..	..	
„ <i>fulva</i> .....	....	W.	..	..	..	..	..	
„ <i>fasciola</i> .....	....	C.W.	..	..	..	..	..	
„ <i>iris</i> .....	....	C.W.	..	*	..	..	*	
„ <i>ilia</i> .....	C.N.	N.	*	*	..	..	*	
„ <i>here</i> .....	....	C.E.W.	..	..	..	..	..	
„ <i>laverna</i> .....	....	W.	..	..	..	..	..	
<i>Dilipa fenestra</i> .....	....	W.	..	..	..	..	..	
<i>Abrota pratti</i> .....	....	W.	..	..	..	..	..	
<i>Athyna mahesa</i> .....	....	W.	..	..	*	..	..	
„ <i>asura</i> .....	....	C.W.	..	..	*	..	..	
„ <i>opalina</i> .....	....	N.C.W.	..	..	*	..	..	
„ <i>jina</i> .....	....	C.W.	..	..	*	..	..	
„ <i>fortuna</i> .....	....	C.	..	..	..	..	..	
„ <i>sulpitia</i> .....	....	C.E.W.	..	..	..	..	..	
„ <i>disjuncta</i> .....	....	C.W.	..	..	..	..	..	
„ <i>recurva</i> .....	....	W.	..	..	..	..	..	
„ <i>punctata</i> .....	....	C.	..	..	..	..	..	
<i>Limenitis albomaculata</i> .....	....	W.	..	..	..	..	..	
„ <i>elwesi</i> .....	....	W.	..	..	..	..	..	
„ <i>sinensium</i> .....	....	W.	..	..	..	..	..	
„ <i>cottini</i> .....	....	W.	..	..	..	..	..	
„ <i>sydyi</i> .....	....	C.W.	*	*	..	..	..	
„ <i>amphyssa</i> .....	....	C.	*	*	..	..	..	
„ <i>cleophas</i> .....	....	W.	..	..	..	..	..	
„ <i>homeyeri</i> .....	....	W.	..	*	..	..	..	
„ <i>helmanni</i> .....	S.	N.C.E.W.	*	*	..	..	..	
„ <i>sibylla</i> .....	N.C.S.	....	*	*	..	..	*	
„ <i>ciocolatina</i> .....	....	W.	..	..	..	..	..	
„ <i>pratti</i> .....	....	C.	..	..	..	..	..	
„ <i>populi</i> .....	....	W.	..	*	..	..	*	
„ <i>danava</i> .....	....	C.W.	..	..	*	..	..	
<i>Neptis thisbe</i> .....	....	C.W.	..	*	..	..	..	
„ <i>arachne</i> .....	....	C.W.	..	..	..	..	..	

## GEOGRAPHICAL DISTRIBUTION OF BUTTERFLIES

	Japan.	China.	Corea.	Anuriland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Neptis antigone</i> .....	....	C.						
" <i>aspasia</i> .....	....	C.W.						
" <i>beroe</i> .....	....	C.						
" <i>hesione</i> .....	....	C.W.						
" <i>armandia</i> .....	....	C.W.						
" <i>cydippe</i> .....	....	C.W.						
" <i>thestias</i> .....	....	W.						
" <i>antilope</i> .....	....	C.W.						
" <i>auanta</i> .....	....	W.			*			
" <i>miah</i> .....	....	W.	..	..	*	..	..	Oriental Region.
" <i>amba</i> .....	....	C.W.	..	..	*			
" <i>philyroides</i> .....	....	....	*	*				
" <i>excellens</i> .....	C.N.	....						
" <i>alwina</i> .....	C.	N.C.E.W.	*					
" <i>mahendra</i> .....	....	W.	..	..	*			
" <i>eurynome</i> .....	....	C.W.E.	..	..	..	..	..	Oriental Region.
" <i>aceris</i> .....	N.C.S.	N.C.E.W.	*	*	..	..	*	
" <i>soma</i> .....	....	W.	..	..	*	..	..	Cachar.
" <i>susruta</i> .....	....	W.	..	..	*	..	..	Cachar.
" <i>adipala</i> .....	....	W.	..	..	*			
" <i>pryeri</i> .....	C.S.	N.C.E.W.	*	*				
" <i>lucilla</i> .....	N.C.	N.W.	*	*	..	..	*	Central Asia.
<i>Atella phalanta</i> .....	S.	....	..	..	*	..	..	Oriental Region.
<i>Melitæa didyma</i> .....	....	N.	..	..	..	*	..	Central Asia.
" <i>aurinia</i> .....	....	N.	*	*	..	..	*	
" <i>parthenie</i> .....	....	....	*	*	..	..	*	
" <i>phœbe</i> .....	N.C.	N.	*	*	..	..	*	
" <i>athalia</i> .....	N.C.S.	....	*	*	..	..	*	
" <i>protomeia</i> .....	....	N.C.	*	*				
" <i>jezabel</i> .....	....	W.						
" <i>agar</i> .....	....	W.						
" <i>bellona</i> .....	....	W.						
" <i>yuenty</i> .....	....	W.						
<i>Argynnis oscarus</i> .....	....	....	*	*				
" <i>selene</i> .....	....	N.	..	*	..	..	*	
" <i>pales</i> .....	....	W.	..	*	*	*	*	Central Asia.
" <i>gong</i> .....	....	W.	..	..	..	*	..	
" <i>eugenia</i> .....	....	W.	..	..	..	*	..	E. Siberia.
" <i>latonia</i> .....	....	W.	..	..	*	..	*	Central Asia.
" <i>daphne</i> .....	C.N.	N.	*	*	..	..	*	
" <i>ino</i> .....	C.	....	*	*	..	..	*	
" <i>aglaia</i> .....	C.N.	N.W.	*	*	*	..	*	Central Asia.
" <i>adippe</i> .....	N.C.S.	N.C.E.W.	*	*	..	..	*	Central Asia.
" <i>ornatissima</i> .....	....	W.						
" <i>nerippe</i> .....	N.C.S.	C.E.W.	..	*				
" <i>laodice</i> .....	N.C.S.	N.C.E.W.	*	*	..	..	*	
" <i>ruslana</i> .....	N.C.	C.W.	..	*				
" <i>paphia</i> .....	N.C.	N.C.E.W.	*	*	..	..	*	
" <i>anadyomene</i> .....	N.C.S.	N.C.E.W.	*	*				

	Japan.	China.	Corea.	Amurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Argynnis sagana</i> .....	N.C.S.	N.C.E.W.	*	*				
" <i>zenobia</i> .....	....	N.W.	..	*		*		
" <i>childreni</i> .....	....	C.E.W.	..	..	*			
" <i>niphe</i> .....	C.S.	C.E.W.	..	..	*	..	..	Chin-Lushai.
<i>Timelæa maculata</i> .....	....	N.C.E.W.						
" <i>albescens</i> .....	....	W.						
" <i>nana</i> .....	....	W.						
<i>Cyrestis thyodamas</i> .....	C.S.	W.	..	..	*	..	..	Loochoo.
<i>Pyrameis cardui</i> .....	N.C.S.	N.C.E.W.	*	*	*	*	*	Cosmopolitan.
" <i>indica</i> .....	N.C.S.	N.C.E.W.	*	*	*	..	*	Canary Isles.
<i>Vanessa limenitoides</i> .....	....	W.						
" <i>io</i> .....	N.C.	....	*	*	..	..	*	
" <i>canacc</i> .....	N.C.	C.E.W.	..	*	..	..	*	Chin-Lushai.
" <i>antiopa</i> .....	N.C.	W.	..	*	*	..	*	
" <i>urtica</i> .....	N.	N.W.	..	*	*	*	*	Central Asia.
" <i>xanthomelas</i> .....	N.C.	C.E.	*	*	*	..	*	
" <i>vau-album</i> .....	N.C.	....	..	*	*	..	*	
<i>Grapta gigantea</i> .....	....	W.						
" <i>c-album</i> .....	N.C.	C.W.	*	*	*	..	*	Central Asia.
" <i>c-aureum</i> .....	N.C.S.	N.C.E.W.	*	*	*			
<i>Araschnia levana</i> .....	N.	....	*	*	..	..	*	
" <i>burejana</i> .....	N.C.	C.W.	*	*				
" <i>doris</i> .....	....	C.W.						
" <i>fallax</i> .....	N.C.	....						
" <i>prorsoides</i> .....	C.	N.W.	..	..	..	..	..	Naga Hills.
" <i>dauidis</i> .....	....	W.						
<i>Pseudergolis wedah</i> .....	....	C.W.	..	..	*	..	..	Tavoy.
<i>Precis iphita</i> .....	....	C.W.	..	..	*	..	..	Oriental Region.
<i>Junonia orithyia</i> .....	....	N.C.W.	..	..	*	..	..	Cachar.
" <i>asterie</i> .....	....	C.E.W.	..	..	*	..	..	Oriental Region.
" <i>almana</i> .....	....	C.E.W.	..	..	*	..	..	Cachar.
" <i>hierta</i> .....	....	C.W.	..	..	*	..	..	Cachar.
<i>Symbrenthia hippoclus</i> .....	....	C.W.	..	..	*	..	..	Oriental Region.
" <i>asthala</i> .....	....	C.W.	..	..	*	..	..	
<i>Libythea myrrha</i> .....	....	W.	..	..	*	..	..	Oriental Region.
" <i>lepita</i> .....	C.	C.W.	..	..	*	..	..	Chin-Lushai.
<i>Zemeros flegyas</i> .....	....	C.E.W.	..	..	*	..	..	Siam.
<i>Dodona durga</i> .....	....	W.	..	..	*	..	..	
" <i>oida</i> .....	....	W.	..	..	*	..	..	Chin-Lushai.
" <i>eugenes</i> .....	....	C.W.	..	..	*	..	..	
<i>Polycæna princeps</i> .....	....	W.						
" <i>lama</i> .....	....	W.	..	..	..	*		
" <i>matuta</i> .....	....	W.						
<i>Stiboges nymphidia</i> .....	....	W.	..	..	*	..	..	Oriental Region.
<i>Abisara fylla</i> .....	....	C.W.	..	..	*			
<i>Taraka hamada</i> .....	C.	C.W.	..	..	*			
<i>Lycæna ægon</i> .....	N.C.	....	*	*	..	..	*	Central Asia.
" <i>argus</i> .....	N.C.	N.	*	*	..	..	*	Central Asia.
" <i>iburiensis</i> .....	N.	....						

	Japan.	China.	Corea.	Amurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Lycæna ægina</i>	.....	W.	..	..	..	*		
„ <i>barine</i>	C.	.....	..	*	..	..	*	
„ <i>optilete</i>	C.	.....	..	*	..	..	*	
„ <i>pheretes</i>	.....	N.W.	..	*	*	..	*	Central Asia.
„ <i>icarus</i>	.....	N.W.	..	*	*	*	*	Central Asia.
„ <i>felicis</i>	.....	W.	..	..	..	..	..	
„ <i>eros</i>	.....	N.	*	..	..	*	*	Central Asia.
„ <i>cleobis</i>	C.	.....	*	*	..	..	..	
„ <i>orion</i>	.....	.....	*	*	..	..	*	
„ <i>lanty</i>	.....	N.W.	..	..	..	*	..	
„ <i>moorci</i>	.....	C.	..	..	..	..	..	
„ <i>lycormas</i>	N.C.	.....	..	*	..	..	..	
„ <i>cœligena</i>	.....	C.W.	..	..	..	..	..	
„ <i>pryeri</i>	N.C.	.....	..	*	..	..	..	
„ <i>euphemus</i>	N.C.	N.	*	*	..	..	*	
„ <i>divina</i>	.....	.....	*	..	..	..	..	
„ <i>chinensis</i>	.....	N.	..	..	..	..	..	
<i>Phengaris atroguttata</i>	.....	W.	..	..	..	..	..	Naga Hills.
<i>Cyaniris albocæruleus</i>	S.	W.	..	..	*	..	..	
„ <i>dilectus</i>	.....	C.W.	..	..	*	..	..	
„ <i>hersilia</i>	.....	C.	..	..	..	..	..	
„ <i>argiolus</i>	N.C.S.	N.C.E.W.	*	*	*	..	*	Central Asia.
„ <i>oreas</i>	.....	W.	..	..	..	..	..	
„ <i>nebulosa</i>	.....	C.W.	..	..	..	..	..	
<i>Zizera minima</i>	.....	W.	..	*	..	*	*	
„ <i>sangra</i>	.....	E.W.	..	..	*	..	..	Andaman Isles.
„ <i>maha</i>	N.C.S.	C.E.W.	*	..	*	..	..	
„ <i>christophi</i>	.....	N.	..	..	*	*	..	Central Asia.
<i>Everes argiades</i>	N.C.S.	N.C.E.W.	*	*	*	..	*	Central Asia.
„ <i>arcana</i>	.....	C.	..	..	..	..	..	
„ <i>fischeri</i>	.....	N.	*	*	..	..	*	
„ <i>xuthus</i>	.....	W.	..	..	..	..	..	
„ <i>ion</i>	.....	W.	..	..	..	..	..	
„ <i>filicaudis</i>	.....	C.E.W.	..	..	..	..	..	
„ <i>davidi</i>	.....	W.	..	..	..	..	..	
„ <i>potanini</i>	.....	N.W.	..	..	..	..	..	
<i>Jamides boehus</i>	.....	C.	..	..	*	..	..	Oriental Region.
<i>Catochryps enejus</i>	.....	W.	..	..	*	..	..	Oriental Region.
<i>Polyommatus bæticus</i>	C.S.	C.E.W.	..	..	*	..	*	{ Central Asia and Africa.
<i>Orthomiella pontis</i>	.....	C.E.	..	..	*	..	..	
<i>Niphanda fusca</i>	N.C.S.	N.C.E.W.	*	*	..	..	..	
<i>Amblopala avidiena</i>	.....	C.E.	..	..	..	..	..	
<i>Arhopala ganesa</i>	C.	C.W.	..	..	*	..	..	
„ <i>japonica</i>	C.S.	.....	*	..	..	..	..	
„ <i>rama</i>	.....	C.	..	..	..	..	..	
„ <i>turbata</i>	C.S.	.....	*	..	*	..	..	
<i>Zinaspia distorta</i>	.....	W.	..	..	*	..	..	
<i>Mabathala ameria</i>	.....	C.W.	..	..	*	..	..	



	Japan.	China.	Corea.	Amurland.	Himalayas.	Tibet.	Europe.	Other Countries and Regions.
<i>Curetis angulata</i> . . . . .	....	C.	..	..	*			
„ <i>acuta</i> . . . . .	C.	C.E.W.						
<i>Camena icetas</i> . . . . .	....	C.W.	..	..	*			
„ <i>ctesia</i> . . . . .	....	W.	..	..	*			
<i>Satsuma ferrea</i> . . . . .	N.C.							
„ <i>circe</i> . . . . .	....	W.						
„ <i>pratti</i> . . . . .	....	C.W.						
„ <i>chalybeia</i> . . . . .	....	C.W.						
„ <i>nicévillei</i> . . . . .	....	C.						
<i>Thecla spini</i> . . . . .	....	N.	*	*	..	..	*	
„ <i>mera</i> . . . . .	N.C.							
„ <i>w-album</i> . . . . .	N.	N.	..	*	..	..	*	
„ <i>patrius</i> . . . . .	....	W.						
„ <i>eximia</i> . . . . .	....	N.W.	*	*				
„ <i>grandis</i> . . . . .	....	N.C.E.						
„ <i>pruni</i> . . . . .	N.	....	*	*	..	..	*	
„ <i>prunoides</i> . . . . .	....	....	*	..	..	..	..	Altai.
„ <i>rubicundula</i> . . . . .	....	C.						
„ <i>lais</i> . . . . .	....	W.						
„ <i>ornata</i> . . . . .	....	C.						
„ <i>inflammata</i> . . . . .	....	N.						
„ <i>v-album</i> . . . . .	....	N.W.						
„ <i>percomis</i> . . . . .	....	W.						
„ <i>cœnone</i> . . . . .	....	W.						
„ <i>herzi</i> . . . . .	....	....	*	*				
„ <i>thalia</i> . . . . .	....	C.						
„ <i>tengstrœmi</i> . . . . .	....	N.	..	..	..	*	..	Central Asia.
<i>Zephyrus taxila</i> . . . . .	N.C.S.	....	*	*				
„ <i>smaragdina</i> . . . . .	N.C.	C.	..	*				
„ <i>coruscans</i> . . . . .	....	W.						
„ <i>desgodinsi</i> . . . . .	....	W.						
„ <i>ataxus</i> . . . . .	....	W.	..	..	*			
„ <i>scintillans</i> . . . . .	....	C.						
„ <i>orientalis</i> . . . . .	N.C.	C.W.	*	*				
„ <i>pedius</i> . . . . .	....	W.						
„ <i>saphirina</i> . . . . .	N.	....	*	*				
„ <i>hecale</i> . . . . .	....	W.						
„ <i>tsangkie</i> . . . . .	....	W.						
„ <i>icana</i> . . . . .	....	W.	..	..	*			
„ <i>bicti</i> . . . . .	....	W.						
„ <i>signata</i> . . . . .	N.	....						
„ <i>quercivora</i> . . . . .	....	C.W.	..	*				
„ <i>cœlestis</i> . . . . .	....	W.						
„ <i>betulæ</i> . . . . .	....	C.W.	..	*	..	..	*	
„ <i>sæpestriata</i> . . . . .	N.C.	....	..	*				
„ <i>jonasi</i> . . . . .	N.C.	N.	..	*				
„ <i>melpomene</i> . . . . .	....	C.						
„ <i>lutea</i> . . . . .	N.C.	....	..	*				
„ <i>seraphim</i> . . . . .	....	W.						

	Japan.	China.	Corea.	Amurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Zephyrus minerva</i> .....	.....	C.						
„ <i>comes</i> .....	.....	C.W.						
„ <i>thespis</i> .....	.....	C.						
„ <i>michaelis</i> .....	.....	W.	..	*				
„ <i>raphaelis</i> .....	.....	.....	*	*				
„ <i>ibara</i> .....	C.							
„ <i>stygiana</i> .....	C.							
„ <i>enthea</i> .....	N.C.	W.	..	*				
„ <i>attilia</i> .....	C.	C.	..	*				
„ <i>butleri</i> .....	N.	.....	..	*				
„ <i>orsedice</i> .....	N.C.							
<i>Sinthusa chandrana</i> .....	.....	C.	..	..	*			
<i>Chrysophanus dispar</i> .....	.....	N.	*	*	..	..	*	
„ <i>phlæas</i> .....	N.C.S.	N.C.E.	*	*	*	..	*	Central Asia.
„ <i>ouang</i> .....	.....	W.						
„ <i>li</i> .....	.....	W.						
„ <i>tseng</i> .....	.....	W.						
„ <i>pang</i> .....	.....	W.						
„ <i>standfussi</i> .....	.....	W.	..	..	..	*		
<i>Cigaritis acamas</i> .....	.....	N.	..	..	..	..	..	W. & C. Asia.
<i>Ilerda viridipunctata</i> .....	.....	W.	..	..	*			
„ <i>brahma</i> .....	.....	W.	..	..	*			
„ <i>saphir</i> .....	.....	C.W.						
„ <i>epicles</i> .....	.....	W.	..	..	*	..	..	Cachar.
<i>Aphnæus lohita</i> .....	.....	C.W.	..	..	*	..	..	Andaman Isles.
„ <i>syama</i> .....	.....	C.W.	..	..	*			
<i>Tajuria luculentus</i> .....	.....	C.						
<i>Rapala nissa</i> .....	.....	C.W.	..	..	*			
„ <i>reperoussa</i> .....	.....	C.W.						
„ <i>micans</i> .....	.....	N.C.E.W.						
„ <i>arata</i> .....	N.C.	N.C.E.	*	*				
<i>Delias belladonna</i> .....	.....	W.	..	..	*			
„ <i>sanaca</i> .....	.....	C.W.	..	..	*			
„ <i>patrua</i> .....	.....	C.W.	..	..	..	..	..	Burmah.
<i>Catopsilia crocale</i> .....	.....	C.	..	..	*	..	..	Oriental Region.
<i>Terias leta</i> .....	C.S.	C.E.W.	*	..	*	..	..	Siam.
„ <i>hecabe</i> .....	C.S.	N.C.E.W.	*	..	*	..	..	Oriental Region.
<i>Colias hyale</i> .....	N.C.S.	N.C.E.W.	*	*	*	*	*	Central Asia.
„ <i>montium</i> .....	.....	W.	..	..	..	*		
„ <i>pakeno</i> .....	C.	.....	..	*	..	..	*	
„ <i>fieldii</i> .....	.....	N.C.W.	..	..	..	*		
<i>Gonepteryx rhamni</i> .....	N.C.S.	N.C.E.W.	*	*	*	..	*	Central Asia.
„ <i>aspasia</i> .....	N.C.	N.C.E.W.	*	*				
<i>Dereas wallichii</i> .....	.....	C.W.	..	..	*			
<i>Pieris napi</i> .....	N.	.....	..	*	..	*	*	
„ <i>melete</i> .....	N.C.S.	N.C.E.W.	*	*	*			
„ <i>extensa</i> .....	.....	C.W.						
„ <i>cisseis</i> .....	.....	C.						
„ <i>canidia</i> .....	.....	N.C.E.W.	*	..	*	..	..	Turkestan.

	Japan.	China.	Corea.	Amurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Pieris rapæ</i> . . . . .	N.C.S.	N.C.E.W.	*	*	*	*	*	Central Asia.
<i>Synchlœ daplidice</i> . . . . .		N.W.	*	*	*	..	*	Central Asia.
„ <i>callidice</i> . . . . .		N.	..	..	*	*	*	Central Asia.
<i>Metaporia largeteaui</i> . . . . .		C.W.						
„ <i>oberthuri</i> . . . . .		C.W.						
„ <i>lotis</i> . . . . .		W.						
„ <i>acræa</i> . . . . .		W.						
„ <i>larraldei</i> . . . . .		W.						
„ <i>goutellei</i> . . . . .		W.						
„ <i>delavayi</i> . . . . .		W.						
<i>Aporia dubernardi</i> . . . . .		W.	..	..	*			
„ <i>dauidis</i> . . . . .		W.						
„ <i>procris</i> . . . . .		W.						
„ <i>lhamo</i> . . . . .		W.						
„ <i>martineti</i> . . . . .		N.W.	..	..	..	*		
„ <i>potanini</i> . . . . .		N.						
„ <i>hippia</i> . . . . .		N.W.	..	*				
„ <i>eratagi</i> . . . . .	N.	N.W.	..	*	..	..	*	Central Asia.
<i>Mesapia peloria</i> . . . . .		N.	..	..	..	*		
<i>Davidina armandi</i> . . . . .		N.C.						
<i>Tachyris paulina</i> . . . . .		W.	..	..	*	..	..	Andaman Isles.
<i>Anthocharis cardamines</i> . . . . .		N.W.	..	*	..	..	*	Central Asia.
„ <i>bambusarum</i> . . . . .		E.						
„ <i>bicti</i> . . . . .		W.	..	..	..	*		
„ <i>seolymus</i> . . . . .	N.C.S.	C.E.W.						
<i>Leucophasia sinapis</i> . . . . .	N.C.	N.E.W.	*	*	..	..	*	Central Asia.
„ <i>gigantea</i> . . . . .		C.W.						
<i>Sericinus telamon</i> . . . . .		N.C.E.W.	*	*				
<i>Armandia thaidina</i> . . . . .		W.						
<i>Luehdorfia japonica</i> . . . . .	C.	C.						
<i>Parnassius epaphus</i> . . . . .		W.	..	..	*	*		
„ <i>jacquemonti</i> . . . . .		W.	..	..	*	..	..	Central Asia.
„ <i>nomion</i> . . . . .		N.	..	*	..	*		
„ <i>széchenyi</i> . . . . .		W.	..	..	..	*		
„ <i>orleans</i> . . . . .		W.	..	..	..	*		
„ <i>delphius</i> . . . . .		W.	..	..	*	*	..	Central Asia.
„ <i>imperator</i> . . . . .		W.	..	..	..	*		
„ <i>citrinarius</i> . . . . .	N.C.	C.W.	*		..			
<i>Leptocircus curius</i> . . . . .		C.W.	..	..	*	..	..	Oriental Region.
<i>Teinopalpus imperialis</i> . . . . .		C.	..	..	*			
<i>Ornithoptera rhadamanthus</i> . . . . .		C.W.	..	..	*	..	..	Oriental Region.
<i>Papilio xuthus</i> . . . . .	N.C.S.	N.C.E.W.	*	*				
„ <i>machaon</i> . . . . .	N.C.S.	N.C.E.W.	*	*	*	*	*	Central Asia.
„ <i>podalirius</i> . . . . .		W.	..	..	..	..	*	N. Africa.
„ <i>mandarinus</i> . . . . .		W.	..	..	*			
„ <i>eurous</i> . . . . .		C.W.						
„ <i>tamerlanus</i> . . . . .		W.						
„ <i>alebion</i> . . . . .		N.C.						
„ <i>cloanthus</i> . . . . .		C.W.	..	..	*			



	Japan.	China.	Corea.	Amurland.	Himalayas.	Thibet.	Europe.	Other Countries and Regions.
<i>Tagiades atticus</i> . . . . .	.. . . .	W.	..	..	*	..	..	Oriental Region.
<i>Ctenoptilum vasava</i> . . . . .	.. . . .	C.E.	..	..	*	..	..	
<i>Hesperia maculata</i> . . . . .	N.C.	N.C.E.W.	*	*				
<i>zona</i> . . . . .	C.S.	N.C.W.	*					
<i>thibetana</i> . . . . .	.. . . .	W.	..	..	..	*		
<i>bieti</i> . . . . .	.. . . .	W.	..	..	..	*		
<i>oberthuri</i> . . . . .	.. . . .	W.	..	..	..	*	*	Central Asia.
<i>alveus</i> . . . . .	.. . . .	W.	..	*	..	*	*	Central Asia.
<i>tessellum</i> . . . . .	.. . . .	N.	..	..	..	..	*	
<i>Thanaos montanus</i> . . . . .	N.C.S.	C.E.W.	..	*	..	..	..	
<i>pelias</i> . . . . .	.. . . .	W.	..	..	..	*	..	
<i>tages</i> . . . . .	.. . . .	N.	..	*	..	*	*	
<i>Isoteinon lamprospilus</i> . . . . .	C.S.	C.E.W.	..	..	..	..	..	
<i>Heteropterus morpheus</i> . . . . .	.. . . .	N.	*	*	..	..	*	
<i>unicolor</i> . . . . .	N.C.	N.	..	*	..	..	..	
<i>Pamphila argyrostigma</i> . . . . .	.. . . .	N.	..	*	..	*	..	Trans-Baikal.
<i>pulchra</i> . . . . .	.. . . .	W.	..	..	..	*	..	
<i>houangty</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>abax</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>flavomaculata</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>niveomaculata</i> . . . . .	.. . . .	W.	..	..	..	*	..	
<i>gemmata</i> . . . . .	.. . . .	W.	..	..	..	*	..	
<i>micio</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>Taractrocera flavoides</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>Adopæa sylvatica</i> . . . . .	N.C.	W.	*	*	..	..	..	
<i>tenebrosa</i> . . . . .	.. . . .	C.	..	..	..	..	..	
<i>nervulata</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>leonina</i> . . . . .	N.C.	C.W.	*	*	..	..	..	
<i>Erynnis comma</i> . . . . .	C.	N.W.	..	*	*	*	*	Central Asia.
<i>Padraona dara</i> . . . . .	N.C.S.	N.C.E.W.	*	*	*	..	..	Andaman Isles.
<i>gola</i> . . . . .	.. . . .	C.	..	..	*	..	..	Foochau.
<i>virgata</i> . . . . .	.. . . .	C.W.	..	..	..	..	..	
<i>maga</i> . . . . .	.. . . .	C.E.	..	..	..	..	..	
<i>trimacula</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>Telicota bambusæ</i> . . . . .	.. . . .	C.	..	..	*	..	..	Oriental Region.
<i>Augiades sylvanus</i> . . . . .	N.C.S.	N.C.E.W.	*	*	..	*	*	Central Asia.
<i>subhyalina</i> . . . . .	N.	N.C.W.	*	*	..	..	..	
<i>orataeis</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>bouddha</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>sylvanoides</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>similis</i> . . . . .	.. . . .	W.	..	..	..	..	..	
<i>ochracea</i> . . . . .	C.	.. . . .	*	*	..	..	..	
<i>Parnara mathias</i> . . . . .	C.S.	E.W.	..	..	*	..	..	Oriental Region.
<i>mencia</i> . . . . .	.. . . .	C.E.	..	..	..	..	..	
<i>sinensis</i> . . . . .	.. . . .	C.W.	..	..	*	..	..	Chin-Lushai.
<i>guttata</i> . . . . .	N.C.S.	N.C.E.W.	*	*	*	..	..	
<i>colaca</i> . . . . .	.. . . .	W.	..	..	*	..	..	Cachar.
<i>thyone</i> . . . . .	.. . . .	C.W.	..	..	..	..	..	
<i>pellucida</i> . . . . .	N.C.S.	C.E.W.	*	*	*	..	..	

## GEOGRAPHICAL DISTRIBUTION OF BUTTERFLIES

	Japan.	China.	Corea.	Amurland.	Himalayas.	Tibet.	Europe.	Other Countries and Regions.
<i>Parnara jansonis</i> .....	C.	.....	*					
„ <i>eltola</i> .....	.....	W.	..	..	*	..	..	Cachar.
„ <i>austeni</i> .....	.....	W.	..	..	*	..	..	Foochau.
„ <i>nascens</i> .....	.....	W.						
„ <i>bromus</i> .....	.....	W.						
„ <i>cærulescens</i> .....	.....	W.						
„ <i>sarala</i> .....	.....	W.	..	..	..	..	..	Khasi Hills.
<i>Baoris oecia</i> .....	.....	C.E.W.	..	..	*	..	..	Andaman Isles.
<i>Aeromachus piceus</i> .....	.....	W.						
„ <i>catocyaneus</i> .....	.....	W.						
„ <i>inachus</i> .....	C.	N.E.W.	*	*				
„ <i>delai-lama</i> .....	.....	W.	..	..	..	?		
„ <i>nanus</i> .....	.....	C.E.						
<i>Halpe varia</i> .....	N.C.S.							
„ <i>submacula</i> .....	.....	C.W.						
„ <i>nephele</i> .....	.....	W.						
„ <i>latris</i> .....	.....	W.						
„ <i>bivitta</i> .....	.....	W.						
„ <i>gupta</i> .....	.....	W.	..	..	*			
„ <i>lucasi</i> .....	.....	W.						
„ <i>cænis</i> .....	.....	W.						
„ <i>blanchardi</i> .....	.....	W.						
„ <i>subflava</i> .....	.....	W.						
<i>Notoerypta curvifascia</i> .....	S.	E.W.						
„ <i>restricta</i> .....	.....	C.W.	..	..	*	..	..	Loochoo Islands.
„ <i>feisthameli</i> .....	.....	W.	..	..	*	..	..	Oriental Region.
„ <i>goto</i> .....	C.							
„ <i>tibetana</i> .....	.....	W.						
<i>Astictopterus olivascens</i> .....	.....	C.W.	..	..	*	..	..	Foochau.
<i>Apostictopterus fuliginosus</i> .....	.....	W.						
<i>Pithauria stramineipennis</i> .....	.....	W.	..	..	*	..	..	Cachar.
<i>Hidari grandis</i> .....	.....	C.W.						
<i>Ismene gomata</i> .....	.....	W.	..	..	*	..	..	S. India.
„ <i>aquilina</i> .....	N.C.	.....	..	*				
„ <i>septentrionis</i> .....	.....	E.W.						
<i>Hasora chromus</i> .....	.....	W.	..	..	*	..	..	Andaman Isles.
„ <i>anura</i> .....	.....	C.W.	..	..	*	..	..	Khasi Hills.
<i>Rhopalocampta benjamini</i> .....	C.S.	C.E.W.	..	..	*	..	..	Cachar.
„ <i>translucida</i> .....	.....	W.						
Total .....	650	147	594	115	137	181	52	75

Of the six hundred and fifty species of Rhopalocera enumerated in the preceding Tables no less than two hundred and seventy-one are, according to our present knowledge, peculiar to China, and of these forty-eight are described for the first time in the present work. Fifteen of the species occurring in the Islands of Japan do not appear to be found elsewhere; and two of these, i. e. *Lycæna iburiensis* and *Zephyrus signata*, are confined to Yesso, whilst a third, *Papilio mikado*, is only found in Kiushiu. Three species found in the Corea have not been detected in any other country, and there are three other species which seem only to occur in the Corea and Japan. Thirty-four species are found in Japan and China, but not in the Corea; eleven in Japan and Corea, but not in China; and eleven in Corea, but not in Japan.

One hundred and seventy-four species are common to China and the Himalayas.

Of species occurring in Europe and Amurland, eleven are found in China only, four in Japan only, and three in Corea only; six are found in China and Japan, eight in Japan and Corea, and six in China and Corea; while twenty-six are common to China, Japan, and Corea.

Of species occurring in Europe, but not recorded from Amurland, only six are found in China, and one in China and Japan.

Dr. Staudinger (Rom. sur Lép. vi.) gives a list of Rhopalocera found in Amurland, and states that twenty-eight of the two hundred and six mentioned are peculiar to that region. This, however, is not really the case, as of the species he refers to as occurring only in Amurland the following are most certainly found in other countries:—

*Lethe epimenides*, var. *epaminondas* (considered by Staudinger to be a good species, has been recorded by Fixsen from Corea).

*Melanargia halimede* (China and Corea).

*Apatura nycteis* (Corea).

*Limenitis homeyeri* (W. China, var. *venata*).

*Neptis thisbe* (C. and W. China).

*Araschnia burejana* (Yesso, Japan, Corea, W. and C. China).

*Thecla eximia*=*affinis* (Corea, N. and W. China).

*Zephyrus smaragdina* (Japan, Yesso, and C. China).

„ *quercivora* (C. and W. China).

„ *michaelis* (W. China, var. *gabrielis*).

„ *butleri*=*oberthuri* (Yesso).

*Aporia hippia* (N. and W. China).

Up to the present time there are, as previously stated, two hundred and seventy-one species of Rhopalocera that have not been met with outside the limits of China dealt with in the present work: of these, one hundred and fifty-nine are so far peculiar to Western China, only forty-seven of which (mostly occurring at extreme elevations) exhibit Palæarctic affinities; the remaining one hundred and twelve are of an Oriental character, and doubtless when the province of Yunnan, Upper Burmah, and Assam have been more fully explored the range of the majority of these species will be found to be more extensive.

Fifty-one species are only known from Central and West China, and of these six alone exhibit Palæarctic affinities.

Twenty-six species are so far peculiar to Central China, and of this number a third exhibit Palæarctic affinities.

In Eastern China we have only one species, *Anthocharis bambusarum*, which so far does not appear to have been found elsewhere. It must be remembered, however, that but little entomological work has been done in this portion of the country, and that at only moderate elevations, which accounts for our limited knowledge of the fauna of the district.

Seven species found in North China are, according to our present knowledge, peculiar to that district. These are all of a Palæarctic character.

The following species appear to be confined to Corea:—*Eneis walkyria*, *Ypthima obscura*, and *Lycæna divina*.



Three species, *Lethe sicelis*, *Arhopala japonica*, and *Parnara jansoni*, have only been found in Japan and Corea.

Among the six hundred and fifty species dealt with in the present work, there are three hundred and thirty-six which occur in other regions. Of these, one hundred and seventy-four are found in the Oriental Region, whilst one hundred and seventy are found in the Palæarctic\* Region, and fifteen are common to both.

Twenty species occurring at extreme elevations in the Himalayas belong to and are included with those enumerated as found in the Palæarctic Region. Of these, fifteen are also found in Europe, and the remaining five in Central Asia.

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Species of Rhopalocera occurring in the watershed of the Yang-tze-kiang .....	551	
Common to both the Palæarctic and Oriental Regions .....	24	} 551
Occurring in the Oriental Region or having Oriental affinities.....	359	
Occurring in the Palæarctic Region or having Palæarctic affinities .....	168	
Occurring in the Palæarctic Region, but having Oriental affinities .....	19	} 168
Palæarctic species occurring near or above the forest-limit .....	121	
Palæarctic species occurring at moderate elevations .....	28	

If the 19 species exhibiting Oriental affinities although occurring in Palæarctic limits be deducted from the total number given in the table as Palæarctic, there remain 149 species; but as 121 of these are found at extreme elevations, there remain but 28 Palæarctic Butterflies occurring in the same zone with the 359 species having Oriental affinities, excluding the 24 species common to both the Palæarctic and Oriental Regions, being a proportion of over 12½ of the latter to 1 of the former.

When the more southern portions of Wallace's Manchurian Subregion have been explored, it will probably be found that the Oriental species will still further predominate.

Species of Rhopalocera occurring in China north of the watershed of the Yang-tze-kiang ..	108	
Common to both the Palæarctic and Oriental Regions .....	15	} 108
Occurring in the Oriental Region or having Oriental affinities .....	14	
Occurring in the Palæarctic Region or having Palæarctic affinities .....	79	
Occurring in the Palæarctic Region but having Oriental affinities .....	8	
Deducting the 15 species of Rhopalocera common to both Regions from the total number		

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\* The term "Palæarctic" as here used excludes the whole of Wallace's Manchurian subregion, with the exception of the Amurland district.

occurring in North China, we have 93 species, of which 14 are Oriental, and 79 Palæartic. Again, deducting the 8 Palæartic species exhibiting Oriental affinities, we have 14 Oriental to 71 Palæartic species, being 5 of the latter to 1 of the former.

Species of Rhopalocera occurring in the Japanese Isles .....	146						
Common to both the Palæartic and Oriental Regions .....	21						
Occurring in the Oriental Region or having Oriental affinities .....	43						
Occurring in the Palæartic Region or having Palæartic affinities .....	82						
Species occurring in the Palæartic Region but having Oriental affinities .....	18						
Species occurring in North Japan (Yesso) .....	<table border="0"> <tr> <td>    { Oriental .....</td> <td>9</td> </tr> <tr> <td>    { Palæartic .....</td> <td>68</td> </tr> <tr> <td>    { Common to both Regions .....</td> <td>18</td> </tr> </table>	{ Oriental .....	9	{ Palæartic .....	68	{ Common to both Regions .....	18
{ Oriental .....		9					
{ Palæartic .....		68					
{ Common to both Regions .....	18						
Species occurring in Central Japan (Hondo) .....	<table border="0"> <tr> <td>    { Oriental .....</td> <td>34</td> </tr> <tr> <td>    { Palæartic .....</td> <td>71</td> </tr> <tr> <td>    { Common to both Regions .....</td> <td>19</td> </tr> </table>	{ Oriental .....	34	{ Palæartic .....	71	{ Common to both Regions .....	19
{ Oriental .....		34					
{ Palæartic .....		71					
{ Common to both Regions .....	19						
Species occurring in South Japan (Kiushiu) .....	<table border="0"> <tr> <td>    { Oriental .....</td> <td>29</td> </tr> <tr> <td>    { Palæartic .....</td> <td>19</td> </tr> <tr> <td>    { Common to both Regions .....</td> <td>14</td> </tr> </table>	{ Oriental .....	29	{ Palæartic .....	19	{ Common to both Regions .....	14
{ Oriental .....		29					
{ Palæartic .....		19					
{ Common to both Regions .....	14						

Deducting the 18 species with Oriental affinities from the number given above as Palæartic, there remain 64. The species occurring in the Oriental Region or with Oriental affinities number 43, excluding 21 which are common to both Regions. The proportion therefore of Palæartic to Oriental species is 3 to 2.

In Yesso (North), omitting 18 species common to both Regions, the Palæartic species predominate to the extent of 15 to every 2 Oriental.

In the main Island (Central) there are 34 Oriental species to 71 Palæartic; omitting 19 common to both Regions, we find there are rather over 2 of the latter to each 1 of the former.

In the Island of Kiushiu (South) there are 19 Palæartic to 29 Oriental species, giving a proportion of 3 of the latter to every 2 of the former.

[*Note.*—The Island of Kiushiu has been much less worked than either of the other two Islands.]

Species of Rhopalocera occurring in the Corea .....	114
Common to both the Palæartic and Oriental Regions .....	18
Occurring in the Oriental Region or having Oriental affinities .....	14
Occurring in the Palæartic Region or having Palæartic affinities .....	8
Occurring in the Palæartic Region but having Oriental affinities .....	11

Deducting the 18 species common to both Regions, we have 96, of which 82 are Palæartic or

have Palaearctic affinities, and 14 are Oriental or have Oriental affinities. The species occurring in the Palaearctic Region or exhibiting Palaearctic affinities, less 11 with Oriental affinities, are 71 in number, thus showing a preponderance of 5 Palaearctic to 1 Oriental.

The relative proportion of Palaearctic and Oriental species occurring in the area dealt with here may be tabulated as follows:—

	Palaearctic.	Oriental.
China, North .....	5	1
Corea .....	5	1
Japan Islands .....	3	1
China, Yang-tze watershed .....	2	25

As has been stated, there are 3 Oriental to every 2 Palaearctic species in the Island of Kiushiu, without deducting from the latter 5 species which exhibit Oriental affinities. It would seem, therefore, that this portion of Japan, and probably the Island of Shikoku, together with the Yang-tze watershed, belong strictly to the Indo-Chinese section of the Oriental Region, and the remainder of the area to the Palaearctic Region—thus rendering the Manchurian Subregion unnecessary so far as the Rhopalocera are concerned.



ANCIENT SWORD-HILT. (N.W. Japan.)



# BUTTERFLIES

FROM

CHINA, JAPAN, AND COREA.

BY

JOHN HENRY LEECH, B.A., F.L.S., F.Z.S., F.E.S., ETC.

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PART I.

NYMPHALIDÆ AND LEMONIIDÆ.

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LONDON:

R. H. PORTER, 18 PRINCES STREET, CAVENDISH SQUARE, W.

1892-93.

Marshall & de Nicéville, Butt. Ind. i. p. 42 (1882); Distant, Rhop. Malay. p. 408, pl. xli. fig. 15, ♂ (1886); Pryer, Rhop. Nihon. p. 29, pl. viii. fig. 9.

*Danaïs sita*, Kollar, Hügel's Kaschmir, iv. p. 424, pl. vi. (1848).

*Caduga tytia*, Moore, Proc. Zool. Soc. Lond. 1883, p. 249; Lep. Ind. p. 61, pl. xv. figs. 1-1<sup>c</sup>, ♂ ♀ (1890).

Primaries black, the discoidal cell and submedian interspace to beyond the middle filled in with pale blue; there are three spots of the same colour on costa beyond outer extremity of discoidal cell, and three subapical streaks; the median interspaces are occupied by large pale blue spots, and there are two series of bluish-white spots on the marginal area. Secondaries ferruginous; the cell and basal half of submedian interspace pale blue, and there are spots of the same colour in the nervular interspaces; a series of bluish-white spots on marginal area; there is a bifurcated reddish streak in the cell. Male with a velvety black glandular patch near outer angle.

Head and thorax black, marked with whitish; abdomen ferruginous above and ringed with white beneath in the male, but entirely white in the female.

The female only differs from the male in having the spots on outer margin of upper surface of both wings better defined.

Expanse 80-110 millim.

This is a conspicuous species, and one of the largest of the genus. It occurs throughout the Himalayas; in China it is common, is found all over Japan, and has been recorded by Oberthür from the Isle of Askold.

I observed a curious habit this Butterfly has, on the Island of Kami Koshigi, off the coast of Satsuma. Just at dusk they ceased flying, and each chose out a small dead branch of a fir tree, on which it hung close to the trunk, with the wings folded over its back. They were very easy to see, and appeared never to choose a large branch or one more than fifteen feet above the ground. By working with my net on a long bamboo I succeeded in procuring an extensive series in a very short time.

According to Col. Lang, as quoted by Marshall and de Nicéville, this insect frequents the wooded glens in the Western Himalayas, at an altitude of 6000 to 7000 feet. Capt. A. Graham Young observes that it is not uncommon in Kulu, and that there are four broods in the year—the first brood appearing in April, and the fourth in October.

The specimens in my own collection were captured from May, throughout the summer, to September, and at elevations ranging from sea-level in Japan to 9000 feet in Western China. The Chinese and Japanese specimens are rather darker than examples from India.

**Caduga melaneus.**

*Papilio melaneus*, Cramer, Pap. Exot. i. pl. xxx. fig. D (1775); Herbst, Pap. pl. cxxiii. fig. 5 (1793).

*Danais melaneus*, Moore, Proc. Zool. Soc. Lond. 1878, p. 822; Marsh. & de Nicév. Butt.

Ind. i. p. 43, pl. v. fig. 5, ♂ ♀ (1882); Distant, Rhop. Malay. p. 14, pl. i. fig. 6 (1882).

*Caduga melaneus*, Moore, Proc. Zool. Soc. Lond. 1883, p. 250; Lep. Indica, p. 60, pl. xiv. figs. 2, 2<sup>b</sup>, ♂ ♀ (1890).

Similar in almost every particular with *D. tytia*, but the black markings of primaries are heavier, the border of secondaries is fuliginous instead of rust-coloured, and the body is orange-buff in colour.

Occurs in the same kind of localities as the last species; is plentiful in Western China, but I have no specimens from any place further east than Chang Yang. In India it is found in the North-east Himalayas; it also occurs in Burma, Java, Formosa, and the Malay Peninsula.

Mr. Elwes remarks (Trans. Ent. Soc. Lond. 1888, p. 300) that this species occurs commonly in the lower valleys of Sikkim up to an elevation of about 6000 feet from March to December.

**Genus TIRUMALA.**

*Tirumala*, Moore, Lep. Ceyl. p. 5 (1880).

“Fore wing broad, triangular; first branch of subcostal emitted at one fifth before end of the cell, and free from the costal, second branch from end of the cell; hind wing broadly oval, exterior margin very convex; costal vein slightly curved; cell short, anteriorly oblique; second subcostal branch starting from nearer the first, and upper median nearer the middle branch, than in *Radena*. Male with an open scent-pouch between the lower median and submedian veins, the pendent sac of which is prominent on the underside. Antennæ shorter than in *Radena*, the club shorter, and tip more pointed. Larva with two pair of fleshy filaments.

“Type *T. limniacæ*, Cram.” (Moore, *l. c.*)

**Tirumala septentrionis.**

*Danais septentrionis*, Butler, Ent. Month. Mag. xi. p. 163 (1874); Marsh. & de Nicév. Butt. Ind. i. p. 48, pl. vi. fig. 8, ♂ ♀ (1882).

*Tirumala septentrionis*, Moore, Lep. Ceylon, p. 5, pl. i. fig. 2 (1880); Lep. Indica, p. 34, pl. vii. figs. 2, 2<sup>a</sup> ♂ ♀ (1890).

*Danais limniacæ*, Butler (*nec* Cramer), Proc. Zool. Soc. Lond. p. 51 (1866).

*Danais hamata*, Butler (*nec* McLeay), Proc. Zool. Soc. Lond. p. 725 (1870).

“Allied to *D. hamata*, McLeay, but constantly much larger, the primaries above with the spots on the disc smaller; secondaries olive-brown (instead of chocolate-brown); the streaks beyond

the cell, between the subcostal and radial nervures, narrower, longer, and not notched externally; the brown patch in the cell broader (frequently reaching to the radial nervure without a notch), submarginal spots more elongated: primaries below paler than in *D. hamata*, secondaries more cupreous in tint. Expanse 4 inches 5 lines." (*Butler, E. M. M.*)

Varies considerably in size. The largest male specimen I have from China measures 116 millim. in expanse, and the smallest male 84 millim.; while the largest female example from the same country expands 120 millim., and the smallest female 90 millim.

*D. septentrionis* differs from *D. limniacæ*, Cram., principally in the more slender streaks and smaller spots. Mr. Moore, quoting Hutchinson, says that it is a slow flyer, and is often observed in crowds on low shrubs in company with *T. limniacæ*.

Very common in Western China, and is found up to an elevation of 6000 feet. It occurs in many parts of India, in Ceylon, and in the Malay Peninsula.

Mr. Butler believes this to be the Indian representative of the Australian *D. hamata* (*D. australis*, Bdv.), and that its range is almost the same as that of *D. limniacæ*.

#### Genus DANAIS.

*Danais*, Latreille, Enc. Méth. ix. p. 10 (1819); Boisd. & Lec. Lép. Am. Sept. p. 133 (1833); Doubl. Gen. Diurn. Lep. p. 89 (1847).

"*Antennæ* about one half the length of the body, gradually but distinctly clavate.

"*Anterior legs* with the femora and tibiæ about equal in length; the tarsi shorter. Tarsi of the males sometimes obscurely two-jointed; the basal joint subcylindric, rather stoutest at the apex; the second joint about one fourth the length of the first, more or less pointed; sometimes without any indication of joints, subcylindric, tapering towards the base and apex. Tarsi of the females four-jointed, the last often indistinct; all except the last with a stout spine on each side of the apex.

"*Middle and posterior legs* with the tarsi very spiny; the claws long, slightly curved; the pulvilli and paronychialia obsolete.

"*Larva* subcylindrical, tapering towards the head; furnished on the third and last segments, and sometimes on the sixth, with long, fleshy, not retractile tentacula.

"*Pupa* suspended, ovate, contracted about the middle; the abdomen very short." (*Doubleday, l. c.*)

Representatives of this genus are found in all the warmer portions of the world.



**Danais chrysippus.**

*Papilio chrysippus*, Linnæus, Mus. Ulr. p. 263 (1764); Syst. Nat. i. pt. 2, p. 767 (1767); Cram. Pap. Exot. ii. pl. cxviii. figs. B, C (1777).

*Danais chrysippus*, Horsfield & Moore, Cat. Lep. E. I. C. i. pl. iv. fig. 7 (larva), fig. 7<sup>a</sup> (pupa); Marsh. & de Nicév. Butt. Ind. i. p. 50, pl. vi. fig. 10, ♂ ♀ (1882).

*Salatura chrysippus*, Moore, Lep. Ceyl. p. 7, pl. iii. figs. 1-1<sup>b</sup>.

*Limnas chrysippus*, Moore, Lep. Indica, p. 36, pl. viii. figs. 1 (larva), 1<sup>a</sup>-1<sup>e</sup> (♂ ♀) (1890).

This widely distributed species occurs sparingly in Central and Western China up to an elevation of 6000 feet. The specimens appear to be very typical, and there seems to be no tendency to vary in the direction of var. *alcippus*, Cram.

It is recorded from Japan, and, although I have never seen an example from that country, it may possibly occur there. There were some specimens from Loochoo in the collection of the late Mr. Henry Pryer, now in my possession.

The larva which, in India, is stated by Mr. Moore to feed on *Asclepias curasavica*, and by Col. Lang on *Calotropis gigantea*, is, together with the chrysalis, described by Mrs. T. Vernon Wollaston as follows:—

“The caterpillar of this *Danais* is rather more than an inch and a half in length, and of a delicate French grey, each segment being ornamented with five black transverse lines, the second and third ones of which are somewhat broader and enclose two large yellow transverse patches. There is a yellow spiracle-line very much interrupted, the skin being puckered, and the spiracles themselves scarcely visible. The head has three broad, transverse, arched, black lines, the anterior one of which encloses a yellow space, bordered in front by a straight basal line. The third, sixth, and last segments are each furnished with a pair of conspicuous dark retractile horns, the anterior pair of which are almost twice the length of the others. When full fed it suspends itself by its tail, and turns into an obtuse semitransparent chrysalis, beautifully marked with small golden spots, placed elliptically round the head, and with a black, raised, semicircular line near the tail, the posterior edge of which is of a brilliant gold; there is also a minute golden spot about the position of the centre of the enclosed wings. The golden markings, however, disappear, by the absorption of the fluids, as the enclosed insect approaches maturity.” (*Ann. & Mag. Nat. Hist.* (5) iii. p. 221.)

Dr. H. C. Lang (‘Butterflies of Europe,’ pl. liv.) gives figures of the larva, pupa, and imago of *D. chrysippus*. In the figure of the caterpillar the processes, referred to by Mrs. Wollaston as horns, appear to be rather soft fleshy spines, the two anterior pairs curving towards the head, and the posterior pair deflected backwards.

**Danais genutia.**

*Papilio genutia*, Cramer, Pap. Exot. iii. pl. ccvi. figs. C, D (1779).

*Papilio genutius*, Herbst, Pap. pl. cliv. figs. 1, 2 (1794).

*Salatura genutia*, Moore, Lep. Ceyl. p. 6, pl. iv. figs. 2, 2<sup>a</sup> (1880); Lep. Indica, p. 45, pl. x. figs. 1, 1<sup>a</sup> (larva), 1<sup>b</sup>, 1<sup>c</sup> (♂ ♀) (1890).

*Danais genutia*, Marsh. & de Nicév. Butt. Ind. i. p. 52, fig. 7 (1882); Distant, Rhop. Malay. p. 18, pl. ii. figs. 2, 3 (1882).

Primaries fulvous, apical half of wing and venation black; there are a few white spots between costa and the end of the cell, some much larger ones beyond; and marginal and submarginal series of white spots interrupted towards apex and inner angle. Secondaries paler fulvous, neuration and border to outer margin broadly black, marginal series of white spots complete, submarginal incomplete.

Head, thorax, and palpi spotted with white; abdomen fulvous, spotted with white along the sides.

The sexes do not differ in colour or markings, but the male has an open scent-gland just below the 1st median nervule.

Expanse 80–100 millim.

Specimens from Central and Western China do not exhibit any material difference from those received from India.

Mr. Elwes (T. E. S. Lond. 1888, p. 300) observes that *D. genutia* is found in Sikkim up to an elevation of 5000 feet throughout the whole year. In Western China it does not seem to occur at altitudes exceeding 2000 feet.

“*Larva* cylindrical, black, with a pair of black fleshy filaments on the third, sixth, and twelfth segments, the first pair longest; each segment with one interrupted white streak along its anterior edge, succeeded by three white transverse spots followed by two transversely elongated yellow spots, the posterior edge of the segment having two parallel interrupted white streaks; lateral band yellow, crossed at the middle of each segment by a black line; abdominal line black; head and feet black, ringed with white. *Pupa* somewhat cylindrical, posterior end hemispherical, anterior ending in two slight prominences; bright green, with a dorsal ring of silvery dots, and a few scattered golden dots.” (*Moore, Lep. Ceyl.*)

Occurs throughout India, China, Malay Peninsula, and Java.

**Genus TREPSICHROIS.**

*Trepsichrois*, Hübner, Verz. bek. Schmett. p. 16 (1816); Moore, Proc. Zool. Soc. Lond. 1883, p. 286.

“*Male*. Fore wing elongated triangular; apex prolonged and slightly rounded, exterior margin very oblique, uneven, somewhat concave in the middle; posterior margin very slightly convex; upper discocellular inwardly oblique, acutely bent before lower radial, emitting a short spur within the cell from the angle; hind wing with a very small pale discoidal glandular patch.” (*Moore, l. c.*)

**Trepsichrois linnæi.**

*Papilio midamus* (part.), Linnæus, Mus. Ulr. p. 251 (1764).

*Euplœa midamus*, Doubleday & Hewitson, Diurn. Lep. p. 87.

*Trepsichrois midamus*, Butler, Journ. Linn. Soc., Zool. xiv. p. 297 (1878); Distant, Rhop. Malay. p. 24, pl. ii. figs. 8, 9, ♂ ♀ (1882).

*Euplœa (Trepsichrois) midamus*, Marshall & de Nicéville, Butt. Ind. p. 74, pl. viii. fig. 13, ♂ ♀ (1882).

*Trepsichrois linnæi*, Moore, Proc. Zool. Soc. Lond. p. 286, pl. xxix. fig. 4, ♀, pl. xxx. fig. 1, ♂ (1883); Lep. Indica, p. 100, pl. xxv. figs. 1 (larva and pupa), 1<sup>a</sup>, 1<sup>b</sup> (♂ ♀) (1891).

*Male.* Primaries deep velvety fuliginous shot with brilliant blue, which colour appears in certain lights to be the ground-colour; a pale blue spot in the discoidal cell and one in each nervular interspace below it form an oblique series of three, and from the middle one of these there is a curved series of five to the costa, beyond is a submarginal series of eight spots and a marginal series, but the latter does not quite reach the costa. Secondaries velvety brown, costal half, especially towards outer margin, ashy grey; there is a whitish patch in the cell just below the origin of first subcostal nervule, and in some specimens a small blue spot just outside the cell between second and third median nervules.

*Female.* Brown, darker towards apex of primaries. Primaries with a large patch of bright blue on apical half; the spots are placed as in the male, but are white in colour; there is a whitish streak in the cell, and another between the median and submedian nervures. Secondaries have a marginal row of round white spots, a submarginal series of white streaks, which are short towards costa, but extend to the base of the wing below median nervure, a discal series which increase in length towards costa, and there are four white streaks in the discoidal cell. Expanse, ♂ 75–120 millim., ♀ 104–120 millim.

As pointed out by Mr. Moore, *P. midamus* of Linnæus has long been confounded with this species, which is probably due to the fact that Linnæus himself referred, “in his original description of *P. midamus* (Syst. Nat. 1758, p. 470), to Ehret’s figure on plate iii. as well as to that on his plate xi., and in the Mus. Ulricæ, p. 251, therein supplementing his description of *P. midamus* with that of the present insect.”

Common throughout Southern Asia. I have received the species from Ichang, Central China, and from various localities in Western China, but it does not appear to have been common in any of the places. The Chinese examples agree in almost every particular with specimens from Darjiling.

The larva of this species is referred to by Marshall and de Nicéville (Butt. Ind. i. p. 75) as follows:—

“Ground-colour testaceous, marked with crimson and black perpendicular lines on the segments, a spiracular row of black spots and some yellow blotches just above the legs. The face is also

marked with crimson and black; legs red; the third, fourth, fifth, and twelfth segments have each a pair of very long tentacula springing from the subdorsal region, and standing almost upright over the body; the lower portion of these processes is crimson, the upper black. Figure 10 of Plate iv. of Horsfield & Moore's Cat. Lep. E. I. C. (1857), from Java, where it 'feeds on a species of *Ficus*, December.' Also Plate iii. fig. 10, caterpillar, and 10<sup>a</sup>, chrysalis, of Horsfield's Cat. Lep. E. I. C. (1829). Pupa, Figure 10<sup>a</sup>.—Castaneous, beautifully marked with gold."

### Genus SALPINX.

*Salpinx*, Hübner, Verz. bek. Schmett. p. 17 (1816); Butler, Journ. Linn. Soc., Zool. xiv. p. 292; Moore, Proc. Zool. Soc. Lond. 1883, p. 300.

"Wings short. Fore wing in male very broad, somewhat quadrate, apex acuminate; exterior margin slightly oblique and convex; posterior margin acuminate at the angle, very convex in the middle; cell broad, short; with a short broad blue or silky brand. Hind wing broad, anterior margin convexly angular in middle; cell very long; with a large pale-coloured upper discoidal glandular patch of compact scales. Female with longer triangular wings." (*Moore, l. c.*)

### *Salpinx vestigiata*.

*Euplœa vestigiata*, Butler, Proc. Zool. Soc. Lond. 1866, p. 288, fig. 1; Distant, Rhop. Malay. p. 26, pl. iii. figs. 6 ♂, 7 ♀ (1882).

*Salpinx vestigiata*, Butler, Journ. Linn. Soc., Zool. xiv. p. 293 (1878).

"*Male*. Anterior wings above very dark velvety blue, with the following pale bluish spots:—one between first and second subcostal nervules, one beyond cell between second discoidal and first median nervules; a submarginal series of five spots placed one above and one below fourth subcostal nervule, one above and one below upper discoidal nervule, and the other beneath lower discoidal nervule; a small and indistinct spot between second and third median nervules, a still smaller and more indistinct one beneath third median nervule, and an oblong streak of the same colour (which denotes the pseudo scent-gland or brand) placed beneath third median nervule. Posterior wing pale olivaceous-brown, much darker towards base, with a pale discoidal patch and three faintly indicated submarginal spots near apex, placed between the nervules. Underside of wings olivaceous-brown; anterior wings with the following bluish-white spots:—one between first and second subcostal nervules; two beyond cell, divided by lower discoidal nervule; one large and subovate between second and third median nervules; three small and subapical, placed obliquely, which are apparently the commencement of a submarginal series, faintly indicated near median nervules; and a very faint, indistinct, and broken marginal series of small spots. Wing below third median nervule much paler. Posterior wings with a submarginal series of bluish-white spots, the upper four of which are placed singly between the nervules, and a submarginal series commencing near anal angle and not continued beyond the first median nervule.

"*Female*. Anterior wing above spotted as in male, but wanting the discal spot beyond cell, and with the costal base and inner margin slightly suffused with rufous. Posterior wings as in male, but wanting the pale discoidal patch, and possessing a marginal series of small spots near anal angle. Wings beneath generally as in male, but possessing only one spot beyond

cell, and with the marginal and submarginal series of spots to anterior wing somewhat more distinct.

“*Male and female.* Head and thorax above black; head and anterior portion of thorax spotted with white; head beneath, sternum, and legs black: palpi, sternum, and immediate base of wings spotted with white; abdomen dark fuscous, spotted beneath with bluish.

“*Expanse* ♂ & ♀ 98 millim.” (*Distant, l. c.*)

I have two specimens (♂ and ♀) from the Province of Kwei-Chow in Western China, and these differ from the specimens described above in number of bluish spots only, thus the male has two spots beyond cell on primaries, and there are seven in the submarginal series; in the female the spots are larger, and there are three additional spots placed as follows:—one in discoidal cell, a small one below the lower of the two outside the cell, and one below the oblong spot. Both sexes have a series of marginal spots above anal angle of primaries, and three white spots on secondaries, the upper one near costa.

This species has a wide distribution, as it is known to occur in the Malay Peninsula, Province Wellesley, Malacca, Sumatra, Java, and Western China, and will probably be found in Burma.

#### Subfam. SATYRINÆ.

#### Genus MANDARINIA, gen. nov.

Affinities with *Mycalesis*, but the body is more robust; the terminal joint of palpi shorter; the antennæ quite half the length of primaries.

The primaries have the costa convex and are rather pointed at apex; the outer margin is almost straight, and there is a distinct lobe on the inner margin of these wings in the male, as well as a patch of long dark brown hairs in the discoidal cell of secondaries.

Under surface of primaries with a silky patch along inner margin.

Type *Mandarinia regalis*, Leech.

#### **Mandarinia regalis.** (Plate II. figs. 1 ♂, 2 ♀.)

*Mycalesis regalis*, Leech, Trans. Ent. Soc. Lond. 1889, p. 102, pl. viii. figs. 2, 2<sup>a</sup>.

*Male.* Ground-colour of all the wings blackish brown, with violet reflections. Primaries traversed by a broad lilac-blue fascia from the first subcostal nervule to the anal angle, its inner edge touching the discoidal cell.

*Female.* Has the male colouring, but the violet reflections are more subdued. Lilac-blue fascia much narrower and more curved. All the wings with more rounded outer margins.

Underside of both sexes chocolate. Outer margins of primaries broadly bluish grey, with a violet tinge, enclosing a row of five, sometimes six, small ocelli, beyond which is an angulated

double line of the ground-colour. Outer margin of secondaries bluish grey, intersected by a wavy line of the ground-colour. A submarginal series of from five to seven ocelli, with white pupils and reddish-brown irides, of which the second, third, and seventh, counting from the anterior margin, are often very faint. Internal to the ocelli is a series of bluish-grey crescents.

Head, thorax, and upper surface of abdomen black. Legs and under surface of abdomen dark chocolate. Antennæ black, chequered with white beneath; tip and underside of club deep orange.

Expanse, ♂ 55-58 millim., ♀ 50-54 millim.

Except that the narrower blue fascia on primaries of the female resembles the same character in *Bicyclus iccius*, Hew., and that the general colour of the wings on upper surface is something like that of *Mycalesis martius*, Fabr., this insect is quite distinct from any known species, and appears to be without any close ally.

Occurs in Central and Western China, but it is local and not very common.

#### Genus MYCALESIS.

*Mycalesis*, Hübner, Verz. bek. Schmett. p. 54 (1816); Westwood, Gen. Diurn. Lep. p. 392 (1851).

“BODY slender, finely hairy. Wings rather large, plainly and uniformly coloured, those of the males generally with a tuft of hairs on the upper side.

“HEAD rather small, with a small conical tuft of hairs in front

“*Eyes* naked, prominent.

“*Antennæ* scarcely half the length of the fore wings, very slender; joints scarcely distinct; terminated by a long but very slender club.

“*Labial palpi* porrected obliquely; the tip elevated rather above the level of the top of the eyes, and advanced in front rather farther than the length of the head, very slender; the first and middle joints sparingly clothed beneath with long, porrect, delicate bristles; the middle of the second joint is also clothed on the back with a tuft of short hairs; terminal joint very slender, acute at the tip, short, and scarcely setose.

“THORAX rather small, rather compressed, and very convex.

“*Fore wings* with the costal margin strongly arched. Apex rounded. Apical margin varying from slightly convex to slightly concave, entire, about three fifths of the length of the costal. Inner margin about one fourth longer than the apical, rather dilated in the male. Costal vein strongly swollen at the base. Postcostal vein with the first and second branches arising from the anterior extremity of the discoidal cell, which extends to the middle of the wing. Upper discocellular vein very minute; middle one longer, curved, rather obliquely directed towards the base of the wing; outer discocellular much longer, strongly arched, united with the third branch of the median vein at a short distance from its origin. In the species in which the base of the median vein is not swollen, the space between its first and second branches is much longer than usual, the

space between the base of the wing and the first branch being proportionately shortened : in others the base of this vein is swollen, and the space between the first and second branches as short as usual. Submedian vein simple, and curved at the base in some species, which have a slit enclosing a tuft of hairs opposite the origin of the first branch of the median vein, but greatly swollen at the base in other species, which have not this slit, the tuft of hairs being placed in these on the upper surface of the hind wings.

“ *Hind wings* with the costal vein extending about two thirds of the length of the costa. Post-costal vein arising opposite the origin of the precostal ; its branch arising at a considerable distance from its base. The discocellular veins forming a nearly continuous rather obliquely transverse termination to the discoidal cell ; uniting with the median vein exactly at, or a little beyond, the origin of its third branch. The discoidal cell in some species bears along its outer edge a tuft of long pale hairs ; whilst in others it is more generally clothed with numerous shorter hairs. Outer margin slightly scalloped.

“ *Fore legs* of the male small. Femur clothed with scaly hairs, slender, as long as the tibia and tarsus, which are thickly clothed with short hairs. *Fore legs* of the female much longer, slender. Tibia rather shorter than the femur or tarsus, which latter is articulated ; the articulations armed with short spines beneath ; the tips destitute of unguis.

“ *Four hind legs* rather long and slender, scaly ; destitute of hairs, and with only a few very small spines on the sides of the tibiæ beneath. The tarsi also almost destitute of spines, and thickly squamose ; the scales hiding the terminal unguis.

“ **ABDOMEN** slender.” (*Doubleday, l. c.*)

The Asiatic species of *Mycalesis* have been separated by Mr. F. Moore (Trans. Ent. Soc. Lond. 1880, pp. 155–177) into 23 distinct genera, but, as Marshall and de Nicéville observe, since “ the structural features common to both sexes, on which reliance is placed in separating the groups, vary in aspect in the sexes of the same species, it is clear that they can only be accepted as generic differences with reservation. The divisions, as usual, rest chiefly on the structure of the male insect, and especially on the presence and position of the sexual scent-pouches or glands, and the tufts of hair which usually accompany them, and so far as these features go the divisions are more satisfactory ” (Butt. Ind. i. p. 103).

### **Mycalesis sangaica.** (Plate II. fig. 4, ♂.)

*Mycalesis sangaica*, Butler, Ann. & Mag. Nat. Hist. (4) xix. p. 95 (1877).

*Martanda sangaica*, Moore, Trans. Ent. Soc. Lond. 1880, p. 169.

*Male.* “ Allied to *M. janardana*. Wings above smoky brown ; outer border narrowly whitish brown, with marginal and submarginal black lines ; primaries with a large ocellus on first median-interspace, black, with white pupil and narrow yellow iris. Wings below sandy brown, mottled with grey, crossed by a central narrow externally diffused lilacine streak ; outer border narrowly whitish brown, with submarginal and marginal dark brown lines : primaries with four ocelli, the second and third extremely small and sometimes obsolete, the first also

small but well-defined, the fourth much larger, black with white pupils and yellow irides; secondaries with seven ocelli of similar character, but surrounded by pale zones, the second, third, and seventh very small, the fifth largest. Expanse of wings 1 inch 11 lines." (*Butler, l. c.*)

In addition to other sexual characters there is a patch of black hairs extending from base to middle of submedian nervure of secondaries.

The female is rather paler in colour than the male, and the outer margins are more rounded in contour; the ocellus on primaries is larger and the yellow iris broader; there is a small ocellus in the first median interspace of secondaries.

Var. **parva**, var. nov. (Plate II. fig. 3.) Rather smaller than the type; the colour is darker and the ocellus is smaller; on the under surface the colour is greyer and the ocelli are larger. In this form there is usually only one distinct ocellus near apex of primaries, but sometimes there are indications of others below it; the pale zones are well defined on the fore wings, but on the hind wings the ocelli are preceded and followed by whitish lines; marginal lines on all the wings whitish.

This species appears to have two forms; the typical race is generally distributed throughout China, and the other, which I have described above as var. *parva*, has so far occurred only at Omei-shan in Western China. The type in the National Museum at South Kensington is from Mongolia.

### **Mycalesis mineus.** (Plate II. fig. 7, var. ♂.)

*Papilio mineus*, Linnæus, Syst. Nat. i. pt. 2, p. 768 (1767); Fabr. Syst. Ent. p. 488 (1775).

*Satyryrus mineus*, Godart, Enc. Méth. p. 510 (1819).

*Mycalesis mineus*, Butler, Cat. Lep. B. M., *Satyridæ*, p. 135 (1868); Marshall & de Nicéville, Butt. Ind. i. p. 117 (1882); de Nicéville, Journ. Asiat. Soc. Beng. lv. p. 235 (1886).

*Calysisme mineus*, Moore, Trans. Ent. Soc. Lond. 1880, p. 162; Lep. Ceyl. pl. xi. figs. 4, 4<sup>a</sup> ♀, 4<sup>b</sup> ♂ (1880).

.. P.D. alis integerrimis subfuscis: subtus posticis ocellis septem; anticis duobus: supra unico." (*Linnaeus, l. c.*)

There are two distinct forms of this species in China. One of these has the markings of the type, but the primaries are more rounded, the apex is obtuse, the outer margin of secondaries less emarginate, and the colour of all the wings greyer; the other form, which occurs in the spring, is similar in shape and in the colour of upper surface, but, as it differs in colour and pattern of under surface, I describe it as:—

Var. **confucius**, var. nov. (Plate II. fig. 7.) Under surface violet-grey, the basal two thirds of all the wings darker; the inner transverse line is indistinct, and the outer transverse line is always



bordered with yellowish, sometimes broadly so; the ocelli are small and are often entirely eliminated.

In male examples of the summer brood the pupil of ocellus on primaries varies in size, as also does the yellowish iris in intensity. The females of this generation do not exhibit quite so much variation in size of pupil of ocellus, but the iris is sometimes very bright yellow and well defined; towards anal angle there are often two or three faintly defined ocelli.

The spring form is more constant above, but the colour and markings of underside are subject to considerable modification. None of the specimens are, however, quite identical with the Indian forms of this species known as *visala*, Moore, and *indistans*, Moore.

Occurs at Chia-ting-fu; Chang-yang; Ichang; Hong-Kong; Foochau; throughout North-east and South India; Ceylon; Burma; Malay Peninsula; Andaman and Nicobar Isles; Sumatra and Java.

### **Mycalesis perdiccas.** (Plate II. fig. 6, ♀.)

*Mycalesis perdiccas*, Hewitson, Exot. Butt. iii. (*Mycalesis*) pl. iii. fig. 15 (1862); Pryer, Rhop. Nihon. p. 30, pl. ix. fig. 2.

*Gareris perdiccas*, Moore, Trans. Ent. Soc. Lond. 1880, p. 157.

*Mycalesis penicillata*, Poujade, Ann. Soc. Ent. Fr. 1884, p. cxxxv.

*M. penicillata*, Pouj.—“Envergure: 48 mill. Dessus d'un brun terreux. Ailes supérieures entières, assez arrondies, ayant un grand œil noir pupillé de blanc et cerclé de jaunâtre près de l'angle interne entre les deux dernières branches de la nervure médiane. Un pinceau de poils noirs presque au milieu de la nervure sous-médiane. Ailes inférieures arrondies, très légèrement dentées, avec un très petit œil noir pupillé de blanc près de l'angle interne; un pinceau de poils raides, d'un blanc jaunâtre, à la base de la cellule. Dessous des ailes avec la base, jusqu'aux deux tiers environ, d'un brun nettement limité sablé de jaunâtre; le reste, gris rosé, se fondant en une teinte olivâtre très finement sablée du brun vers les bords externes. Aux ailes supérieures, un œil correspondant à celui du dessus, surmonté de un à trois petits yeux noirs pupillés de blanc; aux ailes inférieures, près du bord extérieur, sept yeux très petits inégaux, dont le plus grand correspond à celui du dessus. Les quatre ailes bordées de deux lignes brunâtres festonnées, la moins marquée contre la frange.

“Cinq ♂ un peu variés.” (*Poujade, l. c.*)

The Chinese representatives of this species vary in the number and size of the ocelli on under surface, in the intensity of colour of basal two thirds, and in the width of the pale transverse band, which, in some specimens, is without any lilacine tinge. One of these forms, which so far appears to be peculiar

to Western China, is sufficiently aberrant in character to be worthy of a varietal name, and I therefore describe it as:—

Var. **magna**, var. nov. Expanse 60 millim. Rather more fuliginous-brown; three distinct apical ocelli on primaries, and the ocellus towards inner angle of considerable size. On the under surface the basal two thirds browner; ocelli on primaries as above, those on secondaries well defined. All the wings have a wavy blackish submarginal line, and the fringes are hardly paler than the ground-colour.

In some respects this form agrees with de Nicéville's description of *M. sanatana*, but the complete ocelli on the under surface of the wings distinguish it. Probably *M. sanatana*, Moore\*, and *M. gopa*, Feld.†, are Indian forms of *M. perdiccas*; and if this should ultimately prove to be the case, then *sanatana*, Moore, would rank as the type of the species.

Occurs throughout China and Japan, and is also found in the Corea.

### **Mycalesis gotama.** (Plate II. fig. 5, ♂.)

*Mycalesis gotama*, Moore, Cat. Lep. E.I.C. i. p. 232 (1857); Pryer, Rhop. Nihon. p. 30, pl. ix. fig. 1.

*Sadarga gotama*, Moore, Trans. Ent. Soc. Lond. 1880, p. 157.

*Mycalesis borealis*, Felder, Reise Nov., Lep. p. 500 (1867).

“Upperside pale brown; fore wing with upper and lower ocelli; hind wing with a minute ocellus. Underside pale greyish brown; fore wing with transverse yellowish-white band, and the two ocelli as above; hind wing with transverse yellowish-white band; three ocelli from anterior margin near angle, the two lower very small; and three near anal angle, the two lower also very small. Sexes alike. Expanse, ♂ 1½, ♀ 2 inches.” (*Moore, Cat. Lep. E. I. C.*)

*M. borealis*, Feld.—“♂. Alæ supra fusæ, ciliis albidis, striga submarginali obscuriore, plus minus obsoleta, anticæ ocellis duobus nigricantibus, albo pupillatis, ochraceo iridatis, superiore subapicali, parvo, inferiore mediano, multo majore, posticæ immaculatæ.

“Alæ subtus pallide canescenti-ochraceæ, striga submarginali undulata, altera antemarginali tertique anteciliari fuscis, fascia discali angustissima obliqua, nonnunquam integerriam, posticarum cellulam haud stringente ochraceo-alba, intus fusco anguste cincta, anticæ costa basin versus lætius ochracea, ocellis duobus supernis, sed majoribus et saturatoribus, fusco cinctis, circa superiorem nonnunquam duobus minutis obsoletis, posticæ ocellis sex ut in anticis coloratis, tribus superioribus magis extrorsum jactis, parvis obsoletioribus, decrecentibus, quarto inter ramum medianum primum et secundum inferiore anticarum paullo minore, sequente minuto; infimo nonnunquam vix conspicuo.

“Habitat: China Septentrional, Shanghai.” (*Felder, l. c.*)

*Mycalesis (Sadarga) oculata*, Moore (Trans. Ent. Soc. Lond. 1880, p. 158),

\* Horsfield & Moore, Cat. Lep. E. I. C. i. p. 231 (1857).

† Reise Nov., Lep. iii. p. 501 (1867).

has the lower ocellus of primaries larger, but is otherwise very similar to some specimens of *M. gotama*, and is probably the Indian representative of this species. Mr. de Nicéville, in referring to *M. oculata* and *M. charaka* (Butt. Ind. i. p. 109), says:—"It seems probable that the two species, which occur in exactly the same locality, are really only one variable species."

Distributed throughout Central and Southern Japan, and the whole of Northern and Western China.

***Mycalesis unica*, sp. nov.** (Plate II. fig. 9, ♀.)

*Female.* Fuliginous brown; all the wings have a broad pale transverse central band; there is one large pyriform ocellus on the primaries towards apex and one rather larger on the secondaries near anal angle; there is also a minute ocellus towards outer angle of secondaries, and two very faint white dots between this and the large ocellus; submarginal line of all the wings blackish, wavy, and bordered outwardly with pale yellowish on the secondaries. Under surface paler than above, with the central transverse band broadly yellowish white; the ocellus of primaries has, besides the white pupil, a white dot at its lower edge (faintly seen on the upper surface); there is another white dot in the second median interspace and a small ocellus towards inner angle: on the secondaries there is a series of seven ocelli, but the third and fourth are indistinctly formed; the fifth is identical with the ocellus on the upper surface, but the iris is more distinctly yellow; submarginal line as above, but broadly bordered outwardly with whitish on all the wings. Fringes pale grey.

Expanse 62 millim.

This species is not closely allied to any *Mycalesis* that I am acquainted with, but in some respects it bears a superficial resemblance to *M. suaveolens* (Marsh. & de Nicév. Butt. Ind. i. p. 125); the larger size, however, of the latter and the ocellus near inner angle of primaries separate it at once from *M. unica*.

One female example taken at Moupin in July.

***Mycalesis misenus*.** (Plate II. fig. 10, var.)

*Mycalesis misenus*, de Nicéville, Bomb. Nat. Hist. Journ. iv. p. 164, pl. A. fig. 8, ♂ (1889).

"*Male and female.* Upperside: both wings may be known from *M. nicotia*, Doubleday and Hewitson (this being the rains form, while *M. langi*, de Nicéville, is the dry-season form of one species), by the ground-colour being darker; the ocellus of the *fore wing* in the first median interspace almost invariably smaller. Underside: *both wings* with the ground-colour fuscous instead of pale brown, the striation pale brown instead of ochreous. Male may be known by the 'scent-fan' below the costa of the hind wing on the upperside being ochreous; in both forms of *M. nicotia* it is deep black." (*de Nicéville, l. c.*)

In China *M. misenus* is represented by a form which I describe as:—

Var. **sericus**, var. nov. (Plate II. fig. 10, ♂.) Differs from the type on the upper surface in having

the apical ocellus of primaries either very small or altogether absent; the lower ocellus is also generally smaller; the ocellus at anal angle of secondaries is small, and in two or three specimens entirely eliminated. On the under surface the outer marginal area is not paler than the rest of the wing; the first and second ocelli of all the wings are very small and the third and fourth indicated only by white dots or quite absent.

This form occurs at Omei-shan in June at an elevation of 3500 feet.

### Genus NEORINA.

*Neorina*, Westwood, Gen. Diurn. Lep. p. 369 (1851).

“BODY robust. Wings large, subtriangular; fore wings with a broad oblique pale fascia, each with a large ocellus near the outer angle beneath.

“HEAD large, hairy, not tufted in front.

“*Antennæ* not more than two fifths of the length of the fore wings, very slender, much curved downwards at the tip; joints scarcely distinct; terminated by an elongated, very slender, and gradually formed club.

“*Labial palpi* broad, much compressed, very hairy in front, and with a small tuft of hairs in the middle of the back of the middle joint; terminal joint very small, slender, and oval, obliquely prorected, but scarcely reaching to the level of the top of the eyes.

“THORAX robust, oval, hairy.

“*Fore wings* large, subtriangular. Fore margin much arched; apical angle slightly rounded. Apical margin five ninths of the length of the anterior, nearly straight, and very slightly scalloped; inner angle rounded. Inner margin nearly straight in both sexes, considerably longer than the apical. Costal vein but slightly swollen at the base, and extending only to the middle of the costa. Postcostal vein with its branches free; the first and second arising close together before the anterior extremity of the discoidal cell, and uniting with the costa far beyond the extremity of the costal vein; third branch arising halfway between the cell and the tip; fourth branch arising at a little distance beyond the third, extending to the tip of the wing; the terminal part of the vein extending below the tip. Upper discocellular vein very short and oblique, arising at about two fifths of the length of the wing (at the tip of the little dark brown tooth on the inside of the fulvous bar, which in fact forms the boundary of the discoidal cell); middle discocellular rather longer, transverse; outer discocellular much longer, more oblique, and slightly curved; uniting with the third branch of the median vein; closing the discoidal cell almost in a right angle; this third branch being angulated at the point of junction, which is at the same distance from the origin of the third branch as between the first and second branches.

“*Hind wings* nearly semicircular; the outer angle rounded. Costal margin much arched. Outer margin slightly scalloped. The veins as in *Orinoma*. The discoidal cell not extending more than two fifths of the length of the wing, and closed by a slightly curved outer discocellular vein, united to the median vein at the origin of its third branch.

“*Fore legs* of the male small, moderately feathered; the divisions being of nearly equal length and thickness.

“*Four hind legs* (hind and middle pairs) long and strong, scaly, with very few hairs; tibia nearly

as long as the femur, with two rows of small spines beneath; tibial spurs long and very acute. Tarsus with several rows of short spines beneath and at the sides. Ungues strong, acute, simple, very much curved. Paronychia minute, bifid.

“ ABDOMEN elongate, rather narrow.” (*Westwood, l. c.*)

### **Neorina patria.** (Plate XII. fig. 2, ♂.)

*Neorina patria*, Leech, Entomologist, xxiv., Suppl. p. 25 (1891).

Very similar to *Neorina (Cyllo) crishna*, Westw., but much smaller, and the colour is more fuliginous; the outer edge of the creamy-white central band of primaries is sinuous, but clearly defined; the subapical ocellus is, in consequence of the dark ground-colour, very indistinct, and the two white spots above it and one below are placed as in *N. hilda*, Westw.; the apical portion of the outer margin of secondaries is creamy white, but there are no ocelli on the upper surface of these wings; there is an obscure pale submarginal band on all the wings. The colour of the under surface is browner than above; the band of primaries is yellow between cell and costa; the subapical ocellus is well defined, equal in size to that of *N. hilda*, and, as in that species, the two black submarginal lines are preceded by a lilac suffusion. On the secondaries there is a large ocellus towards outer angle, and a smaller one towards anal angle; above the last there is often a more or less distinct bluish spot, sometimes ringed with black; there are two black submarginal lines,—the outer of these is broad and wavy, the inner narrow and undulating; the area immediately preceding the inner line is suffused with lilac, as also is that of the abdominal margin.

Expanse, ♂ 90–100 millim., ♀ 100 millim.

Occurs at Omei-shan in June and July, and in Moupin in July.

### **Pronophila? schrenckii.**

*Pronophila schrenckii*, Ménériés, Schrenck's Reisen, p. 33, pl. iii. fig. 3 (1859); Pryer, Rhop. Nihon. p. 32, pl. x. fig. 1.

*Pararge schrenckii*, Fixsen, Rom. sur Lep. iii. p. 313 (1887).

“ Alis ampliatis, valde rotundatis, subdentatis, supra cinereo-fuscis; posticis punctis quinque tertio minimo, fusco-nigris; alis subtus flavescenti-fuscescentibus, lineis tribus marginalibus, alteris sub disco flexuosis fuscis; anticis ocello unico apicali, posticis sex, 1, 5, 6, majoribus, atris, flavo-cinctis, albo-pupillatis.” (*Ménériés, l. c.*)

Until a new genus is formed for this remarkable species, I prefer leaving it in *Pronophila*. It seems to have no affinities with *Pararge*, but is more suggestive of an aberrant *Lethe*.

This species occurs not uncommonly in July at Moupin and Omei-shan in Western China, also in Amurland. It is common at Gensan, Corea, and in North-west and Central Japan, and Yesso. As it frequents shady places and flies among the dense undergrowth it is very difficult to capture, especially in fine condition.

## Genus LETHE.

*Lethe*, Hübner, Verz. bek. Schmett. p. 56 (1816).

*Debis*, Westwood, Gen. Diurn. Lep. p. 358 (1851).

“BODY rather small. Wings large: the hind ones generally angulated in the middle, with a row of large ocelli.

“HEAD rather small, scarcely tufted in front.

“*Eyes* prominent, especially in the males, hairy.

“*Labial palpi* rather elongated, elevated obliquely as high as, or higher than, the level of the top of the eyes, and protracted to a short distance in front of the face; the long middle joint without any middle tuft on the back, clothed in front with moderately short fine hairs, not forming a close mass; terminal joint very short and slender.

“*Antennæ* not, or scarcely, half the length of the fore wings, very slender; terminated by a slender gradually formed club composed of very short joints.

“THORAX very short, thick, and hairy.

“*Fore wings* triangular-ovate. Fore margin strongly curved; apical angle rounded. Apical margin straight, or but little emarginate, about three fifths of the length of the anterior. Inner margin nearly straight, about as long as the apical. Costal vein dilated at the base, extending rather beyond the middle of the costa. Subcostal vein with its first and second branches arising before the anterior extremity of the discoidal cell; the third and fourth beyond it, about the same distance apart as between the origin of the second and third branches, and of the fourth branch and the tip of the wing. Upper discocellular vein very minute, oblique; middle discocellular much longer, curved at the extremity, being directed rather outwards; outer discocellular longer than the middle one, nearly straight, also directed obliquely outwards, uniting with the third branch of the median vein at about the same distance from its origin as exists between the first and second branches; the third branch being considerably angulated at the point of junction, whereby the discoidal cell is closed somewhat acutely rather beyond the middle of the wing.

“*Hind wings* subovate, more or less scalloped along the outer margin, which is generally deeply angulated or rather shortly tailed at the extremity of the third branch of the median vein. Precostal vein curved, the tip directed outwards. Costal vein extending to about two thirds of the length of the costa. First branch of the postcostal vein arising at a moderate distance from its base, the extremity extending to the outer angle of the wing. Upper and lower discocellular veins oblique, curved, of nearly equal length; the upper one arising at a short distance from the origin of the first branch of the postcostal vein; the lower one uniting with the median vein close to, or exactly at, the origin of the third branch, closing the discoidal cell in an acute point.

“*Fore legs* very minute, and thickly clothed with long silky hairs. The tarsus slender, as long as the tibia, and destitute of joints or claws. *Fore legs* of the female rather longer than those of the male, slender, scaly, destitute of hairs, of nearly equal thickness throughout; the tarsal articulations concealed by scales; obliquely truncate at the tip, where are a few short spines indicating the very short terminal joints.

“*Four hind legs* [middle and hind pair] rather short, slender, scaly; tibiæ but very slightly furnished with a few short spines; tibial spurs rather long; tarsi nearly cylindrical;

basal joint half the length of the tarsus, with but a few very short spines on the underside. Ungues very much curved. Paronychia very slender.

“ ABDOMEN small.

“ The hairy eyes, slender elongated palpi, dilated base of the costal vein of the fore wings, the middle and outer discocellular veins of nearly equal length, and the acute termination of the discoidal cell of the hind wings by the junction of the outer discocellular vein with the median vein at the origin of its third branch, are the chief characters of this genus.” (*Westwood, l. c.*)

### **Lethe? epimenides.**

*Lasiommata epimenides*, Ménétriés, Schrenck's Reisen, p. 39, pl. iii. figs. 8, 9 (1859);

Pryer, Rhop. Nihon. p. 31, pl. ix. fig. 9.

*Neope fentoni*, Butler, Ann. & Mag. Nat. Hist. (4) xix. p. 91 (1877).

*Pararge epimenides*, Ménétriés, var. ? *epaminondas*, Staudinger, Rom. sur Lep. iii. p. 150, pl. xvii. fig. 1 (*epaminondas*), fig. 2 (*epimenides*) (1887).

*Pararge epimenides*, Fixsen, Rom. sur Lep. iii. p. 313.

“ Alis denticulatis, cinereo-fuscis, subtus pallide-flavescentibus; anticis maculis duabus flavidis, atque ocello unico interposito, in fem. fascia maculari flavida; posticis sex ocellatis, ocellis omnibus nigris, albo-pupillatis, flavo-cinctis; illis subtus basi strigis angulatis fuscis, ocellis sub plaga albescenti positus: 1mo (antico) majore, 2, 3, minimis extus distantibus, ultimo (anali) pupilla geminata. Enverg. 2 po.—2 po. 2 lign.” (*Ménétriés, l. c.*)

Ménétriés (*l. c.*) figured both sexes of *epimenides*, placing the species in the genus *Lasiommata*. Staudinger considers it a *Pararge*. Butler formed the conclusion that the two sexes represent distinct species belonging to different genera, and renamed the female *Neope fentoni*, leaving the male in the genus *Lasiommata*. Elwes (P. Z. S. 1881, p. 907) places the species in *Lethe*, to which genus it seems to have close affinities. Its nearest ally is, however, *Pararge roxelana*, Cr., a species occurring commonly in several parts of S.E. Europe and Asia Minor.

Occurs in Central and Western China and mountainous districts of Central and Northern Japan. In the Corea (according to Fixsen) the var. *epaminondas* as well as the type is found, as also in Amurland.

### **Lethe chandica.** (Plate III. figs. 7 ♂, 8 ♀, vars.)

*Debis chandica*, Moore, Horsfield & Moore, Cat. Lep. E.I.C. i. p. 219 (1857).

*Lethe chandica*, Marshall & de Nicéville, Butt. Ind. i. p. 149 (1882).

As Chinese specimens of this species exhibit well-marked varietal differ-

ences when compared with Indian specimens, I describe the Chinese form as—

Var. *cœlestis*, var. nov. (Plate III. figs. 7 ♂, 8 ♀.)

*Male*. Agrees with the Indian form on the upper surface, but some specimens have the outer margin of secondaries broadly bordered with ferruginous. On the under surface all the wings are suffused with violet-grey, especially the outer two thirds of primaries and central and marginal areas of secondaries; costal half of the central transverse line of secondaries is angulated but hardly curved; following this line are some yellowish spots as in the type. All the ocelli are of nearly equal size, and smaller than in the type.

*Female*. The red of upper surface is rather deeper in tone, and the ocelli on secondaries, except the second, smaller; on the under surface the brown colour of basal two thirds is less broken by paler markings; the outer third of primaries agrees with the Indian form, but on the secondaries the ocelli are smaller, and there are some ferruginous markings on the outer margin.

One male example is a curiously aberrant specimen; the outer half of primaries and two thirds of secondaries above are pale brown, and the under surface of all the wings is pale brown suffused with faint violet-grey; the ocelli of primaries are mostly obsolescent, and those on secondaries are very small.

Commonly distributed throughout Central and Western China. I also took specimens at Foochau in April 1886. According to Marshall and de Nicéville it is plentiful in Sikkim and occurs in the Khasi Hills, Sylhet, Manipur, Upper Tenasserim, and Shillong.

### **Lethe europa.**

*Papilio europa*, Fabricius, Syst. Ent. p. 500 (1775).

*Debis europa*, Hewitson, Journ. Linn. Soc., Zool. viii. p. 143 (1865).

*Papilio arete*, Cramer, Pap. Exot. iv. pl. 313. figs. E, F (1780), ♂.

*Papilio beroe*, Cramer, Pap. Exot. i. pl. 79. figs. C, D (1779), ♀.

*Lethe europa*, Marshall & de Nicéville, Butt. Ind. i. p. 149 (1882); Distant, Rhop. Malay. p. 43, pl. v. fig. 5 ♂, 6 ♀ (1882).

“*Male*. Upperside dull brown. Fore wing with an incomplete pale band from the costa just beyond the cell, and coincident with the white inner band below, nearly obsolete in some specimens; a trifid whitish spot with a pale ochreous spot below it near the apex; two ochreous marginal interrupted lines edged with dusky, broadly internally. Hind wing also with two ochreous marginal lines defined with dusky, broadly bordered with dusky internally; a row of submarginal black spots sometimes obsolete, that near the apex coalescing with the dusky margin. Underside with the basal area dark umber-brown, crossed by a prominent silvery white subbasal streak on both wings. Fore wing with a white oblique transverse discal band tinged with yellow, joined at the middle by a pale band from the apex, forming together a Y-shaped figure, and enclosing a dark brown triangular patch; a row of six ocelli



on the outer pale band, the sixth geminate, all grey with irregular black pupils, and circled with pale brown and violet; the area beyond the ocelli yellowish, shading into dark brown towards the margin, and grey at the apex; two ochreous marginal lines sharply defined with black lines. Hind wing with six very large ocelli, all profusely irrorated with white, and all, except the first, disintegrated, the whole enclosed by a silvery lilac line; an outer ochreous and an inner silvery marginal line, both sharply defined with black. Cilia ochreous.

“*Female* similar to the male, but paler coloured; on the upperside the fore wing is crossed from the middle of costa to outer angle by a broad straight pure white band; the subapical spots are pure white; and on the hind wing the submarginal black spots are more prominent. Underside similar to the male, but having in addition a broad transverse white bar on fore wing which more or less obliterates the two lower ocelli.” (*de Nicéville, l. c.*)

Mr. Elwes (*Proc. Zool. Soc. Lond.* 1881, p. 903) says *Debis europa* “occurs at Kiukiang (*Maries*) and possibly elsewhere. A specimen in the Hewitson collection from Amoy resembles the variety *nilgherriensis*, Guér.”

The figures of *beroe*, Cram., from China agree fairly well with specimens I took at Foochau in April, but my collectors do not appear to have met with any form of *L. europa* in Central or Western China.

Marshall and de Nicéville state that this species occurs on the plains of India and in Sikkim, Burma, the Andamans, Malayana, and China.

### **Lethe dyrta.**

*Debis dyrta*, Felder, *Reise Nov.*, Lep. iii. p. 497 (1867).

*Lethe dyrta*, Butler, *Cat. Lep. B. M., Satyridæ*, p. 115 (1868); Marshall & de Nicéville, *Butt. Ind.* i. p. 152, pl. x. fig. 22, ♂ ♀ (1882).

*Male*. Fuliginous brown tinged with olive; primaries with white spots towards apex; an indistinct pale band from costa to inner angle and a submarginal series of indistinct ocelli; secondaries also have a series of indistinct ocelli on submarginal area. Under surface brown; primaries paler at the base and along inner marginal area; the cell crossed by two wavy lilac-white lines, and there is a transverse white band beyond the cell; there is a series of six ocelli without pupils, enclosed by wavy lilac-white lines; secondaries traversed by basal, sub-basal, and central lilac-white lines; there is a series of six ocelli, that near outer angle is of large size and has a white pupil, yellow iris, and is encircled by lilac-white; the second, third, and fourth are not well formed, and the black portion of each is much broken up; the fifth is large, and the sixth double.

The *female* differs from the male in having a broad central white fascia on primaries. Expanse, ♂ 60–68 millim., ♀ 56–70 millim.

Chinese examples do not differ in any important character from Indian specimens.

Common and generally distributed in Central and Western China, and I have a few examples taken by myself at Foochau in April. In India it occurs throughout the Himalayas.

**Lethe baucis.** (Plate IV. figs. 5 ♂, 6 ♀.)

*Lethe baucis*, Leech, Entomologist, xxiv., Suppl. p. 3 (1891).

*Lethe procris*, Leech, l. c. p. 2.

Allied to *Lethe brisanda*, de Nicéville, but the ground-colour is not so reddish brown. Wings broader and rounder; outer margin of secondaries not so produced; ocelli smaller; both sexes have a pale apical mark, and the female a white fascia resembling that of *Lethe rohria*, Fabr. Under surface: there is no pale bar in the cell of primaries; the line commences nearer the centre of costa; the ocelli of secondaries are all larger, and the central line is not indented below the middle.

Expanse, ♂ 64 millim., ♀ 66 millim.

Var. **procris**. (Plate IV. fig. 7, ♂.) Smaller, and the outer margin of primaries straighter, which gives the insect the appearance of being sharper-winged. On the under surface of primaries the dark bars in discoidal cell are only faintly indicated. The dark transverse line is distinctly elbowed below costa.

The *Lethe* which I have described as *L. procris* does not appear, on a comparison with a large series, to be specifically distinct from *L. baucis*. I was at first deceived by the crushed bodies of two of the specimens, which I then considered to be the females, but after a more careful examination I now find to be males.

Appears to be generally distributed in Western China, and also occurs at Chang-yang in Central China.

**Lethe rohria.** (Plate IV. fig. 8, ♂.)

*Papiho rohria*, Fabricius, Mant. Ins. ii. p. 45 (1787).

*Satyrus rohria*, Godart, Enc. Méth. ix. p. 479 (1819).

*Lethe rohria*, Marshall & de Nicéville, Butt. Ind. i. p. 156 (1882).

*Male*. Dark brown; primaries traversed by a broad white band from middle of costa to just above inner angle; this band is interrupted by the median nervules, most decidedly by the first nervule; there are three white spots near apex, but the lower one is not always well defined. Under surface pale chocolate-brown; primaries have a pale violet-grey subbasal transverse line and a white band as above; there is a short white streak from costa near apex, and below this three ocelli, the third indistinctly formed: secondaries have six ocelli, all with white pupils and yellow irides, the sixth bipupillated; pale violet-grey subbasal, central, and submarginal lines, the central one angulated below the large costal ocellus. The ocelli on the under surface show through on the upper surface, and there is sometimes a distinct ocellus with white pupil in the first median interspace.

The *female* is paler in colour, and the band on primaries is wider.

Expanse, ♂ 56-60 millim., ♀ 60-61 millim.

There is no appreciable difference between Chinese and Indian specimens of *L. rohria*.

A common species in China. It occurs throughout the Himalayas up to an elevation of 5000 feet from April to November, and is also found in Java.

### **Lethe verma.**

*Satyrus verma*, Kollar, Hügel's Kaschmir, iv. p. 447, pl. xvi. figs. 1, 2 (1848).

*Tansima verma*, Moore, Proc. Zool. Soc. Lond. 1882, p. 235.

*Lethe verma*, Marshall & de Nicéville, Butt. Ind. i. p. 158, pl. x. fig. 23 ♂ (1882).

*Male*. Fuliginous brown; primaries with a broad whitish transverse band, which is interrupted by the subcostal nervure and does not extend beyond the third submedian nervule; there are one or two blackish spots with white centres towards anal angle of secondaries. Under surface with the fascia on primaries as above; two submarginal ocelli below apex: secondaries with three transverse lilacine lines, the central one wavy; six submarginal ocelli, each with a white pupil and reddish iris; the first ocellus is not much larger than the fifth, and the third is the smallest of the series.

The *female* is rather larger and paler on both surfaces.

Expanse, ♂ 60 millim., ♀ 64-68 millim.

Occurs in June and July at several places in Western China.

The width of the white fascia of primaries varies considerably, and to a greater extent than is the case in specimens from Darjiling.

A common Himalayan species, occurring up to about 9000 feet from April to November.

According to Col. Lang, as quoted by Marshall & de Nicéville (*l. c.*), *L. verma* is abundant in the North-west Himalayas, frequenting shady places and alighting on the trunks of rhododendrons and oaks in preference to rocks.

### **Lethe satyrina.**

*Lethe satyrina*, Butler, Trans. Ent. Soc. Lond. 1871, p. 402.

*Lethe naias*, Leech, Trans. Ent. Soc. Lond. 1889, p. 100, pl. viii. fig. 4.

*Tansima satyrina*, Moore, Trans. Ent. Soc. Lond. 1881, p. 305.

*Mycalesis styppax*, Oberthür, Etud. d'Entom. xiii. p. 44, pl. x. fig. 109 (1890).

*Male*. Blackish brown; apical third slightly paler, a pale band intersected by a line of the ground-colour on the outer margins of all the wings, but most distinct on the secondaries. Two faintly-outlined ocelli near apex of primaries and five on secondaries; of these last the fourth and fifth are the most distinct, the white pupils and pale irides being well marked. The others are very indistinct, and appear to be the ocelli of the underside showing through the wing.

*Female.* Similar to the male, but larger and a shade paler in colour. Fringes pale whitish brown.

Under surface: colour same as on the upperside in both sexes. Primaries: two ocelli near apex with white pupils and yellow irides well developed, and on the outer margin are a greyish-violet wavy line and one of pale brown, narrowly separated by the ground-colour. Secondaries: a narrow transverse streak of greyish violet, edged internally with dark brown before the middle of the wing, and another of the same colour bordered externally with a darker shade of ground-colour beyond the middle of wing; this, starting from the anterior margin in the direction of inner margin, is suddenly diverted towards the outer margin, but after reaching the second subcostal nervule it resumes its original course and terminates at the anal angle. Six very distinct white-pupilled ocelli; of these No. 1 on the anterior margin and No. 5 are the largest, whilst that at the anal angle has two white pupils. Each ocellus is placed within a ring of greyish violet; on the outer margin lines similar to those on primaries. Fringes as above.

Expanse, ♂ 64 millim., ♀ 68 millim.

Widely distributed, occurring in various localities from Kiukiang to Moupin. At Chang-yang it is found at an elevation of 6000 feet.

The type of *L. satyrina*, Butl., is from Shanghai.

### **Lethe butleri.**

*Lethe butleri*, Leech, Trans. Ent. Soc. Lond. 1889, p. 99, pl. viii. fig. 3.

*Mycalesis turpilius*, Oberthür, Etud. d'Entom. xiii, p. 43, pl. ix. fig. 101 (1890).

Wings in both sexes smoky brown, with their margins traversed by a slender pale band intersected by a line somewhat darker than the ground-colour.

*Male.* Outer third of primaries rather paler than rest of wing. One small ocellus near the tip. Towards the outer margin of secondaries are two or sometimes three ocelli, that nearest to the anal angle being the largest and always having a white pupil, though this varies in size, and is scarcely visible in some specimens.

*Female.* Larger than the male. Outer third of primaries paler. Often there are two ocelli situated one below the other near the apex, and sometimes a third lower down towards the outer angle. Ocelli on secondaries vary from two to four in number, and are arranged along, and parallel with, the outer margin; the lower pair always the largest.

Under surface of both sexes pale greyish brown, with a pale band intersected by a dark wavy line, and bordered internally by a dark serrated line running parallel with the outer margins. Venation prominent. Outer third of primaries paler and separated by a dark brown wavy line. Discoidal cell divided by a dark line. Parallel to the outer margin are two, three, or four ocelli, that nearer the apex being much the largest.

The markings on the secondaries are a dark basal streak from costa to the submedian nervure; beyond this is another dark streak starting from the costa, and, after skirting ocellus at anterior angle, forms a deep elbow towards the outer margin, and then strikes off in an oblique direction towards the anal angle. Parallel with the outer margin is a series of six ocelli, that near the costa being the largest and nearly twice the size of No. 5, the next largest; Nos. 4 and 6 are about equal, but the latter sometimes exhibits a tendency to gemination. The costal ocelli can be faintly seen on the upper surface.

Expanse, ♂ 58-62 millim., ♀ 68 millim.

Common in June, July, and August throughout the valley of the Yangtze. It has been found at an altitude of 7000 feet.

### **Lethe marginalis.**

*Satyris marginalis*, Motschulsky, Etud. d'Entom. ix. p. 29 (1860).

*Lasiommata maackii*, Bremer, Bull. Acad. Petr. iii. p. 468 (1861); Lep. Ost-Sib. p. 22, pl. iii. fig. 3 (1864).

*Lasiommata marginalis*, Motschulsky, Bull. Mosc. 1866, i. p. 190.

*Pararge maackii*, Pryer, Rhop. Nihon. p. 31, pl. ix. fig. 8.

"Fuscus, alis anticis lateraliter lato subtestaceis, utrinque vitta, vix arcuata, subalbida; alis posticis supra fuscis, lateraliter vix dilutioribus; subtus, lineis subarcuatis longitudinaliter 2 undulaque sinuata circa ocellis, nigro-fuscis, margine lineis undulatis duabus ocellisque lateralis 5 cinereo-testaceis, hoc medio nigris, albo-punctatis, tribus mediis minutis. Exp. al. 19½ l." (*Motschulsky, Etud. d'Entom.*)

The female is rather larger than the male and broader in the wing; the basal two thirds of primaries limited by an obscure pale transverse band; there are usually three ocelli below apex and a pale dash on costa.

Appears to be generally distributed throughout Western China; it also occurs at Chang-yang and Ichang in Central China: Pryer has taken it at Yamato in Japan, and I met with it in Yesso. Fixsen records the species from Corea (Rom. sur Lep. iii. p. 313).

### **Lethe lanaris.** (Plate IV. figs. 3 ♂, 4 ♀.)

*Lethe lanaris*, Butler, Ann. & Mag. Nat. Hist. (4) xix. p. 95 (1877).

*Satyris (Pararge) davidianus*, Poujade, Ann. Ent. Soc. Fr. 1885, p. xciv.

"*Male*. Wings smoky brown, the disk of primaries rather paler; the basal area of all the wings densely clothed with woolly hair: primaries with a dusky submarginal line: secondaries with five indistinct ocelli, the first four dusky, with scarcely traceable irides, the fifth larger, dull black, with white pupil and diffused sordid testaceous iris; a whitish submarginal stripe, intersected by a blackish line. Primaries below with the basal two thirds uniformly smoky brown, apical third and internal area greyish; five discal ocelli in an almost straight line (the first and last slightly smaller), black, with white pupils, yellow irides, and dusky zones surrounded with lilacine; a whitish submarginal stripe intersected by a blackish line: secondaries smoky brown, crossed by two dusky central lines, the outer one concave to third median branch, and then angulated to back of apical ocellus; six discal ocelli, the first and fifth four times as large as the others (which are of the size of those in the primaries), similar in character to those of primaries; outer border whitish, with a submarginal black line; margin black. Expanse of wings 2 inches 10 lines.

"Near to *Lasiommata maaki* of Bremer and *Pronophila schrencki* of Ménétrés." (*Butler, l. c.*)

*Female*. Larger and paler; the central portion of basal two thirds of primaries hardly darker than

outer third, which is clearly defined by a pale oblique fascia inwardly bordered with dark brown; the ocelli of secondaries are larger, and the first four distinct. Under surface pale brown; the cell of primaries is closed by a dark brown bar and divided by an angulated transverse bar of the same colour; the oblique fascia of upper surface is reproduced; the marginal ocelli are, as a rule, more distinct; secondaries have the space between the dusky lines paler than the rest of the wing.

Marginal ocelli varying from one to three are present on the upper surface of the primaries of some examples of both sexes; the ocelli of secondaries are as well defined in some specimens of the male as in the female, but such cases are exceptional.

“*Satyrus (Pararge) davidianus*, Pouj.—Envergure 77 mill. Forme du *Lasiommata maackii*, Bremer. Dessus brun clair un peu diaphane, laissant voir en partie les lignes du dessous. Ailes inférieures dentées, ornées d’une rangée anté-marginale de cinq taches rondes d’un brun foncé, faiblement pupillées de blanc, dont la plus large est cerclée d’ocre jaune et située vers l’angle interne; ce dernier est occupé par une très petite tache pyriforme. Bordure jaune d’ocre terne lisérée de brun, à peine indiquée aux ailes supérieures.

“Dessous roux pâle: ailes supérieures traversées par une bande blanchâtre fondue extérieurement, partant au-delà du milieu de la côte, se couvant au premier rameau de la nervure médiane, puis se dirigeant vers les quatre cinquièmes du bord interne; cette bande est nettement limitée intérieurement par une teinte d’un roux plus foncé fondue insensiblement vers la base; la cellule est traversée aux deux tiers par une ligne courbe légèrement sinueuse. Une rangée de cinq yeux noirs pupillés de blanc, à iris jaune clair et cerclés de blanchâtre, longe le bord externe. Ailes inférieures ornées de six yeux semblables à ceux des premières ailes; celui de l’angle supérieur et l’avant-dernier sont du double des autres, le dernier est formé de deux yeux réunis. Milieu des ailes traversé par deux lignes rousses: l’une, à peu près droite, part de la côte, touche la base des rameaux des nervures sous-costale et médiane et se dirige en s’atténuant vers le bord abdominal; l’autre, sinueuse, contourne intérieurement l’œil de l’angle supérieur, puis, se courbant en sens inverse, vient aboutir un peu au-dessus de l’angle interne. L’extrémité de la cellule est marquée d’une ligne rousse. Les quatre ailes sont bordées d’un double liséré roussâtre se détachant sur un fond pâle.

“Une femelle, de Mou-Pin (Thibet oriental), prise par M. l’Abbé A. David. Coll. du Muséum.”  
(*Poujade, l. c.*)

Appears to be not uncommon in Central and Western China. The type in the National Collection at South Kensington is from Ningpo.

### **Lethe helena.** (Plate IV. figs. 1 ♂, 2 ♀.)

*Lethe helena*, Lecch, Entomologist, xxiv., Suppl. p. 3 (1891).

*Male.* Fuscous brown; outer half of primaries pale; secondaries with a submarginal series of five black spots ringed with paler, and the last pupillated.

*Female.* Like the male, but the primaries are traversed by a broad, straight, white fascia from centre of costa to inner angle, and the spots on secondaries are all pupillated with white. Under surface of both sexes as in *Lethe lanaris*, Butl., but the pale outer area of primaries in

male is larger; the white fascia is present in the female, and the transverse lines of secondaries are nearer together.

Expanse, ♂ 70 millim., ♀ 76 millim.

This species was obtained only at Chia-ting-fu and Omei-shan, Western China, in July.

### **Lethe hecate.** (Plate VII. fig. 1, ♂.)

*Lethe hecate*, Leech, Entomologist, xxiv., Suppl. p. 3 (1891).

*Male.* Closely allied to *L. cyrene*, Leech, but smaller and darker brown in colour; the outer margin of primaries is rounder; the ocelli on secondaries are smaller, without distinct fulvous rings, and the fourth and fifth have white centres. The colour of the under surface is greyish; the outer discal bar of primaries is not continued beyond the median nervure, and the band beyond the cell is narrower, more oblique, and sinuous, and terminates at the first median nervule. On the secondaries the first ocellus is not so far removed from the others as in *L. cyrene*, and the whitish borders to the narrower and darker transverse lines and other whitish markings are much less broad.

Expanse 60 millim.

The *female* has the outer third of primaries paler and limited by a still paler band; the second, fourth, and fifth ocelli of secondaries are larger.

Occurs not uncommonly in the neighbourhood of Wa-shan, Ta-chien-lu, and Huang-mu-chang, Western China, at elevations ranging from 2000 to 8000 feet, during the months of June and July.

### **Lethe oculatissima.** (Plate VII. fig. 2, var. ♂.)

*Mycalesis oculatissima*, Poujade, Ann. Soc. Ent. Fr. 1885, p. xxiv; Oberthür, Etud. d'Entom. xiii. pl. 10. fig. 104 (1890).

*Lethe occulta*, Leech, Entom. xxiii. p. 26 (1890).

“Envergure: 55 mill.—Dessus brun clair ou transparaissent légèrement les ocelles et les lignes du dessous. Ailes supérieures ayant deux taches noires, rondes, près du bord externe: l'une vers l'angle apical, l'autre, plus grande et pupillée de blanc, entre les deux dernières branches de la nervure médiane. Ailes inférieures légèrement dentées bordées d'un double liséré brunâtre et ornées de deux taches placées comme celles des ailes supérieures. La tache de l'angle interne est assez largement pupillée de blanc et cerclée de fauve.

“Dessous roussâtre, finement sablé de jaunâtre, principalement aux ailes inférieures. Ailes supérieures partagées par une teinte rousse fondue intérieurement, partant de la côte, à peu près au tiers extérieur et se dirigeant près de l'angle interne. Cette teinte est suivie à la côte par une tache triangulaire jaune d'ocre clair. Une ligne rousse occupe transversalement le tiers extérieur de la cellule. Près du bord externe, environ à la sixième partie de l'aile, il y a une rangée de cinq yeux pupillés de blanc, à iris jaunâtre, cerclés de brun et à auréole jaunâtre. Le premier est brun et le plus petit, le deuxième est noir, à peu près égal aux deux suivants, qui sont bruns, et le cinquième, noir, est le plus grand. Ailes inférieures

partagées à peu près au milieu par deux lignes rousses, courbes et sinueuses, partant de la côte et aboutissant au bord interne. Bord externe orné d'une rangée de six yeux semblables à ceux de l'aile supérieure, mais de dimensions différentes : le premier est le plus large, noir et détaché des autres, les deux suivants sont assez petits et le quatrième du double plus grand, le cinquième est noir et du double du précédent, le dernier, également noir, est petit et souvent double. Les quatre ailes sont bordées d'un double liséré brun à intervalles jaunâtres ; franges d'un brun clair. Corps de la couleur des ailes. Antennes brunes, annelées de blanc, à massue en partie fauve. Décrit sur six mâles appartenant à la collection du Muséum." (*Poujade, l. c.*)

The above description applies exactly to some of my female specimens of this species, but others have five distinct ocelli on upper surface of secondaries, and one example has a double subapical ocellus on primaries.

In my male specimens the outer area of primaries does not appear to be appreciably paler than the rest of the wing, but the pale fascia, as shown in the figure, is generally visible. The ocelli of primaries are often smaller than in the female, and the lower one is always without white pupil.

The male specimen from Chang-yang (Plate VII. fig. 2), described by me as *Lethe occulta*, is without doubt referable to *L. (M.) oculatissima*, Poujade, but is larger than male specimens from Western China, and on the under surface of primaries there are but four ocelli, and the second and third of these are very indistinctly formed ; on the secondaries there are six ocelli, but the third and fourth are very shadowy, and the outer central transverse line is angulated below the first ocellus. I think the name of *occulta* may be retained for the Central Chinese race of this species.

The typical form is common throughout Western China, but so far it is represented in Central China by the var. *occulta* only.

### **Lethe diana.**

*Debis diana*, Butler, Journ. Linn. Soc., Zool. ix. p. 55 (1866) ; Pryer, Rhop. Nihon. p. 32, pl. ix. fig. 12 ; Oberthür, Etud. d'Entom. vi. p. 16, pl. vii. fig. 2 (1881).

*Lethe whitelyi*, Butler, Ann. & Mag. Nat. Hist. (3) xx. p. 403, pl. ix. fig. 8 (1867).

*Lethe consanguis*, Butler, *op. cit.* (5) vii. p. 133 (1881).

"Alæ supra fusæ ; anticæ fascia obliqua subcostali brevi pallida post cellam posita ; corpus fuscum.

"Alæ subtus fusæ ; anticæ fascia alba triangulari, ad angulum analem coarctata ; cella lineis duabus nigro-fuscis ; margine postico lineis duabus pallidis marginato ocellisque tribus nigris albo pupillatis fulvo, fusco ochreoque circumcinctis submarginato. Posticæ lineis duabus mediis super cellam, ad costam approximantibus ; margine postico lineis duabus pallidis marginato ocellisque sex submarginato, primo quinq̄toque majoribus. Alar. exp. unc. 1 $\frac{6}{8}$ ." (*Butler, Journ. Linn. Soc.* 1866.)



*L. whitelyi*.—"Alæ supra fusæ: anticæ fasciola discali pallidiore pone cellam posita; ocello subapicali valde indistincto, fusco, flavo cincto: posticæ ocello subanali nigrescente, brunneo cincto, indistincto: corpus olivaceo-fuscum.

"Alæ subtus fere velut in *L. diana*, Butl.: anticæ autem fascia magis angulari, ocellis tantum duobus, superiore multo majore: posticæ areola discocellulari latiore, partim violaceo micante; ocellis majoribus: corpus cinereo-fuscum. Exp. alar, unc.  $2\frac{7}{16}$ .

"Nagasaki. N. Japan. B.M." (*Butler, A. M. N. H.* (3) xx.)

*L. consanguis*, Butl.—"Allied to *L. whitelyi*, similar on the upper surface, but differing below in the outer edge of the broad central belt of primaries being more transverse, obliquely excised on the costa, very slightly zigzag on the second median interspace, bordered externally with white as usual; three decreasing ocelli in a lilac nebula towards apex, as in typical *L. diana*: secondaries with the zones of the ocelli and the submarginal band silvery (or steel) blue instead of lilac, the third ocellus reduced to a mere point. Expanse of wings 2 inches 4 lines.

"It is possible that this may prove to be a beautiful variety of *L. whitelyi*; but it differs conspicuously from our examples of that species, particularly in the vivid coloration of the ocellus-zones and submarginal band below. Nikko." (*Butler, A. M. N. H.* (5) vii.)

This species is common all over Japan during the warm weather; it is very variable in size, shade of colour, and markings, and extremely difficult to take in good condition. I obtained specimens in the Corea at Gensan and Fusan. It is recorded by Mons. Oberthür from Kouy-tchéou, Western China.

### **Lethe davidi.**

*Debis davidi*, Oberthür, *Etud. d'Entom.* vi. p. 15, pl. vii. fig. 5 (1881).

This species is very closely allied to *serbonis*, Hewitson, the principal point of difference being the more angulated central transverse line on the under surface of the primaries. Possibly it is only a local form of *L. serbonis*, of which species the following is the original description:—

"Upperside rufous-brown; both wings with two submarginal brown lines; anterior wing with two indistinct pale spots on the costal margin beyond the middle; posterior wing with a series of three black eye-like spots, and an ocellus near the anal angle. Underside rufous; anterior wing with a zigzag black line and a large pale spot, bordered on both sides with black within the cell; the discocellular nervure brown, crossed beyond the middle by a dark brown band, bounded outwardly, near the costal margin, by a dull white spot; a white spot near the apex, and below two small ocelli, one of which is incomplete, followed by a band of brown and a submarginal band also brown; posterior wing crossed by two brown bands, before and at the middle; a brown line at the end of the cell; a series of six ocelli, the first and fifth larger and more distinct than the rest; the outer margin and a line near it black." (*Hewitson, Ent. Mo. Mag.* xiii. p. 151.)

Oberthür only describes the male; the female is similar to the male, but

the apical third is paler, limited by an undulating transverse dark band which is followed on the costa by a whitish blotch; there is also a whitish patch on costa before the apex. Expanse 70–76 millim.

Var. **flavofasciata**, var. nov. A form of the female in which the limiting transverse line of primaries is broadly bordered outwardly with reddish brown, merging into yellowish on the costa.

Generally distributed throughout Western China, occurring in some localities at an elevation of 8000 feet. June and July.

### **Lethe laodamia.** (Plate III. fig. 4, ♂.)

*Lethe laodamia*, Leech, Entomologist, xxiv., Suppl. p. 67 (Sept. 1891).

*Male.* Allied to *Lethe (Debis) davidi*, Oberth., but it is much paler on the upper surface, and the spots on the secondaries are distinctly black; the fifth with a white central dot, as in *davidi*, and between this and the inner margin is a small triangular red patch. The under surface is grey-brown; the primaries have two reddish-brown bars across the cell, and there is a band of the same colour beyond, oblique and edged externally with whitish; there are four ocelli on the outer margin placed on a pale lilacine band; submarginal and marginal lines brownish; the secondaries have two reddish-brown bands and a series of six ocelli, each of which has a pale lilacine zone, and the first and fifth are larger than the others; the outer margin is reddish brown, traversed by two pale lines.

*Female.* Similar to the male, but the primaries have a faint whitish oblique central band and a dark obscure band on the submarginal area, the latter edged with whitish on the costa.

Expanse, ♂ 64 millim., ♀ 76 millim.

One male example, taken at an elevation of 6000 feet at Wa-shan, in July, and a female specimen taken at about 4000 feet at Omei-shan.

### **Lethe christophi.** (Plate V. figs. 5 ♂, 6 ♀.)

*Lethe christophi*, Leech, Entomologist, xxiv., Suppl. p. 67 (Sept. 1891).

*Male.* Pale brown. Primaries have some indistinct pale spots below costa on outer third of the wing, but there are no other markings. Secondaries have a large silky black patch below cell, and beyond there is a series of five blackish spots, the largest being the first, second, and fourth; this last has traces of a white pupil; the submarginal line is broad and pale, but not well defined. Under surface pale brown, strongly suffused with lilacine on the basal two thirds of all the wings, and apical third of fore wings; the primaries are traversed by two broad rufous-brown parallel lines, both are rather wavy, but the first does not quite attain the costa; the cell is crossed by a bar of the same colour; there is a small ocellus towards apex, with two white spots below it, and a pale cloud above; submarginal line wavy and dusky, ill-defined below costa, and diffused below third median nervule; marginal line rufous brown: secondaries are traversed by two rufous-brown lines, the outer one curved, and beyond it is a series of six ocelli, of which the first and sixth are the largest, the last is bipupillated, and the white pupil of the fourth is conspicuously large; submarginal and marginal lines as on primaries. Fringes white, chequered with brown at the extremities of the nervules.

*Female*. Similar to the male, but the outer third of primaries is paler, limited by a narrow dusky band, and the white spots are more distinct; the apical half of the outer third of secondaries is also paler, and the fourth black spot has a large white central spot.

Expanse, ♂ 56-74 millim., ♀ 63-80 millim.

Moupin; Omei-shan, July and August; Chang-yang.

Allied to *Lethe bhairava*, Moore, but, apart from its paler colour, it is easily distinguishable from that species by the different character of the sexual mark in the male, and the marking of the under surface.

### **Lethe titania.** (Plate V. figs. 7 ♂, 8 ♀.)

*Lethe titania*, Lecch, Entomologist, xxiv., Suppl. p. 67 (Sept. 1891).

Allied to *Lethe (Debis) serbonis*, Hewitson, with which it agrees in many respects on the upper surface, but the colour is rather brighter; the limiting line of the basal area of primaries is angulated; the pale marks below costa are more obscure; the white dot in fifth black spot is very faintly indicated, but the first black spot is larger and has a pale centre. The under surface of primaries is pale brown; the cell is crossed by two reddish-brown bars, enclosing a violet-grey space; beyond the cell is a reddish-brown band, which is broadest below costa, where it is outwardly bordered with violet-grey, and tapers towards inner margin; there is a short band of violet-grey from the apex, in which is placed three faint ocelli; marginal line violet-grey, edged internally with brownish. Secondaries darker than the primaries, basal two thirds suffused with violet-grey, traversed by two reddish-brown bands, the first is narrower than the second, which has a deep outward projection just above the third nervule; the ocelli are well defined, each has a violet-grey zone, and the pupil of the fourth is very large; there is a cloud of violet-grey at the outer angle, and the marginal line, of the same colour, terminates in a triangular spot at the anal angle. Fringes whitish, marked with brown at the ends of the nervules.

Expanse, ♂ 63-66 millim., ♀ 70 millim.

Occurs in Moupin, June; Pu-tsu-fong, June and July; Chia-ting-fu, July.

### **Lethe camilla.** (Plate V. figs. 1 ♂, 2 ♀.)

*Lethe camilla*, Léech, Entomologist, xxiv., Suppl. p. 3 (1891).

*Male*. Dark brown, darker on central area, and clothed with hairs along the nervules and submedian nervule of primaries; there is a pale spot near the apex, and this is the only distinct marking. Secondaries have a large blackish patch towards anal angle (evidently a sexual character), sparingly clothed with long brownish hairs; there are three black spots on outer margin, two of these are situated towards outer angle (the upper one is not always distinct), and the other before the blackish sexual patch referred to. Under surface grey-brown, suffused with reddish on the outer third of all the wings; the transverse markings are reddish brown, and similar in character to those of *L. latiaris*, Hew., but the second line of secondaries is not indented, the first and fifth ocelli are much larger and more distinctly formed; on the primaries the outer central line is followed by a yellowish band, which is cut into by the angulations of the line; the ocelli are well defined.

*Female.* Primaries reddish brown, with a fairly broad, interrupted, fulvous, central band, and a paler spot towards apex. On the outer margin of secondaries there are five black spots, the first and fifth with white central points, and the third punctiform. The under surface is similar to that of the male, but the outer half of the primaries is suffused with reddish.

Expanse, ♂ 64 millim., ♀ 66 millim.

*Var. privigna, var. nov.* (Plate V. figs. 3 ♂, 4 ♀.) The male is smaller, and the sexual black mark is less diffused and forms an almost round spot, intersected by the first median nervule. On the under surface of both sexes the band following outer central line is broader and paler and is not interrupted.

In the female the band on upper surface of primaries is narrower, whitish in colour, and hardly interrupted.

Expanse, ♂ 54 millim., ♀ 64 millim.

The type of this species occurs at Chia-ting-fu; Chia-kou-ho; and Wa-shan, in July, at elevations ranging from 1000–6000 feet. The var. *privigna* has, so far, been received only from Moupin and Wa-ssu-kow, where it occurs also in July, but not below 5000 feet.

### ***Lethe trimacula.*** (Plate VI. fig. 7, ♂.)

*Lethe trimacula*, Leech, Entomologist, xxiii. p. 29 (1890).

*Male.* Fuscous brown; apical third of primaries slightly paler, and enclosing a distinct ocellus. Secondaries with two ocelli near anal angle, the upper one with white pupil faint or entirely absent. Under surface of primaries grey-brown, apical third greyish clouded with pale brown, and divided off by a dark brown curved slightly wavy band; the discoidal cell is closed by a dark brown line, and divided transversely by another line of the same colour; ocellus very distinct; a dark brown line parallel with outer margin is preceded by a zigzag one, and followed by one at the base of the pale grey fringes. Secondaries greyish, with five well-formed ocelli, that on the costa is very large and bipupillated, as also is the smaller one at anal angle; two brown lines traverse the disc, the outer curves half round the costal ocellus, and then proceeds in a series of waves to the inner margin; fringes and marginal lines as on primaries. The ocelli on both surfaces have pale fulvous irides and are ringed with pale fuscous.

Expanse 68–72 millim.

*Female.* Same as male, but apical third of primaries limited by a pale band.

This species has been received only from Chang-yang, Central China, where several examples of each sex were captured in July.

### ***Lethe proxima, sp. nov.*** (Plate VI. fig. 8, ♂.)

*Male.* Closely allied to *Lethe trimacula*, Leech, but exhibiting the following points of difference:—

On the upper surface the apical third of primaries is more distinctly angulated; the ocellus is much larger, and the fulvous iris is broader; there are four submarginal ocelli on secondaries,

but the first two are often indistinct. The under surface is darker than in *L. trimacula*; the apical third of primaries is limited by a conspicuous dark grey-brown transverse band, which runs obliquely from costa to third median nervule, and then descends in a sinuous course to the inner angle; the transverse markings of secondaries are more angulated; the costal double ocellus is placed rather obliquely and is more elongate in form, below this there are five distinct ocelli; all the ocelli, including that on the primaries, have dingy yellowish irides.

*Female.* Similar to the male, but the apical third is limited by a broad pale fulvous band, which unites with the iris of apical ocellus, and is marked with whitish on the costa.

Expanse, ♂ 62–70 millim., ♀ 65–68 millim.

This species may be at once separated from *L. trimacula* by the different arrangement of ocelli on under surface of secondaries.

Occurs throughout Western China, at altitudes ranging from 5000–7000 feet, during the months of July and August.

### **Lethe nigrifascia.** (Plate III. figs. 1 ♂, 2 ♀.)

*Lethe nigrifascia*, Leech, Entomologist, xxiii. p. 28 (1890).

*Male.* Fuscous brown, darker on the outer margins. Primaries crossed by a black band, which curves from the costa, and is not well defined until it reaches the third median branch, where it is dilated, as it also is at each succeeding vein to the inner margin. Secondaries have a submarginal series of six black spots set in pale rings, the first is largest, but does not greatly exceed the fourth, whilst the sixth is smaller and indistinct; a pale line parallel with outer margin. Fringes white, fuliginous at extremities of the nervules. Under surface ochreous brown, fuscous towards outer margin; a broad whitish bar crosses the discal cell; central transverse line whitish, ill-defined, commencing as a blotch on the costa, and bordering a faint reproduction of the black band of the upper surface; a smaller white patch nearer the apex, and a pale line parallel with the outer margin. Secondaries have two pale violet basal lines, the first is indistinct after passing the median nervure, but the second continues its course to the submedian, where it turns in and terminates at the internal nervure; beyond is another pale violet line, bordered inwardly with brown, running from costa to first median branch, where it turns sharply inwards and upwards for a short distance, then again turns and descends to the median nervure; a fourth pale violet line traverses the wing in a wavy course from costa to inner margin; this is bordered externally with various shades of brown and limits the outer third, which is somewhat darker than the rest of the wing, and has a series of six ocelli; the first four of these ocelli are surrounded with pale violet, but in the last two, which are larger, this colour is only distinct on their inner edge; the sixth ocellus is double; a pale violet line parallel with outer margin forms triangular blotches opposite the last three ocelli, that at the anal angle being the largest; fringes as above.

*Female.* Colour of the male, but there is no black band on the primaries; a blackish shade, broadest near the costa, where it is bordered by some pale yellowish dashes, runs obliquely to beyond third median branch, and then curves inwards to the inner margin; some whitish spots towards apex. The under surface is pale fulvous, and the pale violet lines on the secondaries of the male are replaced in this sex by pale yellowish ones.

Expanse, ♂ 70–74 millim., ♀ 78 millim.

Appears to be generally distributed and not uncommon during June and July in Western China; I have two males and one female from Chang-yang, where they were captured in August.

Originally I compared this species with *Debis armandina*, Oberth., with which it certainly has many characters in common; but I now find that it is more closely allied to *Lethe tristigmata*, Elwes (Trans. Ent. Soc. 1887, p. 444; *op. cit.* 1888, pl. viii. fig. 1), as it resembles that species in the male mark on primaries.

The following characters on the under surface, among others, readily distinguish it: the white apical mark on primaries, which in *L. tristigmata* is represented by four or five spots, and the different arrangement of the transverse lines on the secondaries.

### **Lethe ocellata.** (Plate III. fig. 3, ♂.)

*Debis ocellata*, Poujade, Ann. Soc. Ent. Fr. 1885, p. x.

*Lethe simulans*, Leech, Entomologist, xxiv., Suppl. p. 23 (1890).

“Envergure: de 54 à 60 mill.—Dessus brun clair légèrement olivâtre, laissant voir, par transparence, une partie des lignes et taches du dessous. Ailes supérieures à bord externe un peu sinué, ayant une tache enfumée, plus ou moins vague, sur la base des deuxième et troisième branches de la nervure médiane. Inférieures coupées presque carrément, légèrement dentées, la dent médiane plus accusée, bordées de brun foncé partagé par un liséré fauve clair. Cinq taches du même brun, rondes, inégales, correspondant aux ocelles du dessous, précèdent la bordure.

“Dessous du même ton que celui du dessus, mais beaucoup plus clair; ailes supérieures partagées par une ligne sinueuse plus foncée, fondue intérieurement, partant de la côte un peu après la cellule et se dirigeant vers l'angle interne. Deux lignes du même ton occupent latéralement la cellule. Une tache lilas est située à la côte près de l'angle apical. Ailes inférieures partagées par deux lignes courbes très sinueuses, plus foncées que le fond, bordées intérieurement par un filet pâle et occupant latéralement un peu moins du tiers médian. Deux lignes semblables, mais moins accentuées, se trouvent à la base de l'aile. Le bord externe est orné de six yeux noirs pupillés de blanc à iris jaune et cerclés de lilas, celui situé à l'angle interne est double. Bordure des quatre ailes fauve, précédée d'un liséré lilas parallèle aux sinuosités de l'aile.

“Trois ♂ de Mou-Pin rapportés par M. l'abbé A. David. Collection du Muséum.” (*Poujade, l. c.*)

*L. simulans*, Leech.—*Male*. Nearly allied to *Lethe nigrifascia*, Leech, but much smaller in size and darker in colour; the black transverse band of primaries is inconspicuous, and is not dilated at any part of its outer edge; on the secondaries the black marginal spots are similar to those of *L. nigrifascia*. Fringes brown. Under surface greyish brown; basal half of primaries darker, limited by a fairly broad brown fascia, which is not edged with paler as in *L. nigrifascia*; there are two brownish bars in discal cell; all the ocelli of secondaries are distinctly ringed with bluish white.

Expanse 60 millim.

Superficially like *Lethe tristigmata*, Elwes, but distinguished by the different colour of under surface, angulation of transverse lines, and character of apical spots.

This would seem to be a scarce species, as I have only five male specimens; four of these were taken at Omei-shan in June and July, and one at Pu-tsu-fong in July. There are three male specimens in the Paris Museum collection from Moupin.

### **Lethe labyrinthea.** (Plate VI. figs. 1 ♂, 2 ♀.)

*Lethe labyrinthea*, Leech, Entomologist, xxiii. p. 28 (1890).

*Male.* Brown, with an olivaceous gloss. Primaries have two dark clouds in the discoidal cell, and a blackish central transverse band; from the outer edge of the last rays are projected along the nervules to the outer margin, intersecting in their course a blackish transverse line; a second abbreviated waved blackish band extends from inner margin to second median nervule. Secondaries have a submarginal series of six black spots, enclosed between two wavy ill-defined blackish bands, parallel with outer margin is a narrow blackish line; fringes white, variegated with blackish at the extremities of nervules. Under surface pale ochreous, tinged with olivaceous; two brown bars in discoidal cell of primaries; central transverse line brown, oblique, with three deep indentations, and edged towards costa with yellowish; some pale spots near costa precede a suffused brownish marginal line. Secondaries with a grey-brown pale-edged band near the base, extending from costa to median nervure, beyond is a brown suffused line curving from costa to abdominal margin, and emitting a spur to the median nervure; central band of unequal width and edged externally with blackish, followed by a broad ochreous marginal band, in which is placed a series of six ocelli, the third and fourth are rather indistinct, and all more or less completely encircled with lilacine white; a submarginal line of the same colour edged on each side with black, and swelling out into lunules opposite the last three ocelli; fringes white, chequered with brownish at extremities of nervules.

*Female.* Paler; markings of primaries above same as on under surface of male, but with the addition of two small ocelli below apex.

Expanse, ♂ 70 millim., ♀ 80 millim.

The males somewhat resemble the same sex of *L. nigrifascia* in the character of the male mark, but in general appearance the species comes nearer to *L. callipteris*.

One female example from Omei-shan, the only specimen received from Western China, is smaller, darker, and the pale markings are broader and brighter.

Occurs at Ichang and Chang-yang in Central China, and at Omei-shan in Western China, during July.

**Lethe callipteris.** (Plate VI. figs. 3 ♂, 4 ♀.)

*Neope callipteris*, Butler, Ann. & Mag. Nat. Hist. (4) xix. p. 92 (1877); Pryer, Rhop. Nihon. p. 32, pl. ix. fig. 11.

“*Male*. Bronzy olive-brown; external area smoky brown; outer border paler, lunulated: primaries with a discal series of ochraceous spots, forking above the third median branch; the veins upon the central region densely clothed with dark brown scales, especially the submedian vein and the three median branches; two dusky streaks across the apical half of the cell: secondaries with six ochraceous spots, the first, second, fourth, and fifth oval and enclosing large, ovate, black spots, the last small, transverse, enclosing two small black spots: body bronzy brown; thorax reddish in front, greenish in the centre. Wings below altogether paler, sandy yellowish; external area dusky: primaries with two brown bars across the apical half of the cell, a lunated angulated transverse discal band of the same colour; three pale subapical spots, the uppermost trifid, the second ocelliform; a lunulated submarginal stripe: secondaries with the basal area slightly dusky, three pale-edged dusky lines from the costal nervure across the cell; a lunated and angulated, diffused, brown, discal line bounding the ocelli internally; six ocelli, the first and fifth large, the third extremely minute, the sixth small and geminate; all black, with white pupils and yellow irides; area immediately beyond the ocelli beautifully pinky opaline; a brown-edged series of compressed angulated spots of the same colour close to the margin; edge of margin black; fringe white-varied: body below sordid whitish; legs ochreous.

“Expanse of wings 2 inches 7 lines.” (*Butler, l. c.*)

In the female all the yellowish markings are of a paler tint and more clearly defined.

This is a mountain insect, occurring in July and August at Oyama, Yamato, and also in Yesso, Japan.

**Lethe sicelis.**

*Debis sicelis*, Hewitson, Exot. Butt. iii., *Deb.* pl. i. fig. 3 (1862).

*Lethe sicelis*, Pryer, Rhop. Nihon. p. 32, pl. ix. fig. 10.

“*Upperside*. Female, yellow-brown. Anterior wing crossed near the middle by an indistinct pale band; posterior wing with indistinct submarginal lines and four ocelli, two of them little more than minute brown spots, one only (the lowest) with a white pupil. Underside yellow-brown, with the outer margins and a line near them dark brown; anterior wing with a band across the cell, and a curved band at the middle, bordered outwardly with white; a band of white near the apex enclosing two ocelli: posterior wing with a broad, transverse white band with rufous border on both sides before the middle, followed by seven ocelli; the first and fifth the largest, the sixth and seventh united; all black, with white pupils, the iris orange-yellow bordered with light brown, and again with lilac-white. Expanse  $2\frac{4}{10}$  inch.” (*Hewitson, l. c.*)

The male is similar to the female in coloration, but it has a glandular patch of long hairs near the outer extremity of the discoidal cell of secondaries.

Occurs commonly in Central Japan in July and August, also at Gensan in Corea. In his Catalogue of the Lepidoptera of Japan, the late Mr. Pryer



wrote :—"This is extremely abundant about Yokohama and everywhere on the plains, but does not go very far up the mountains, where it is replaced by the next species (*L. diana*). I have taken the larva, and believe it feeds on the bamboo-grass."

### **Lethe cyrene.** (Plate VI. figs. 6 ♂, 5 ♀.)

*Lethe cyrene*, Leech, Entomologist, xxiii. p. 27 (1890).

*Male.* Brown, tinged with ochreous; apical third of primaries slightly paler, divided off obliquely from just beyond the middle of costa to near inner angle, and containing a series of four small blackish spots, each placed at the interior end of a narrow longitudinal fold on the outer margin, an indistinct dark line parallel with outer margin. Secondaries with five black spots set in fulvous rings, the costal one of the series has a large white pupil, and the third is least in size, a small chestnut patch at anal angle; fringes white, chequered with brown, and preceded by a double line, following the contour of outer margin. Under surface ochreous brown; two short transverse brown bars intersect the discoidal cell, the space between them is pale ochreous, and the outer bar is continued below the median nervure to the inner margin; beyond the cell is a broad brown band, which traverses the wing in an oblique direction to the first median branch, below which it turns inwards and then outwards to the inner margin, this band is bordered externally with pale ochreous; a submarginal series of five small ocelli set in a transverse patch of pale ochreous is followed by two brown lines parallel with the outer margin, the interspace filled up with pale ochreous from opposite the first ocellus to inner angle; fringes grey, with a dark line at their base. Secondaries traversed by a pale ochreous stripe bordered with brown; this stripe does not attain the inner margin, and the outer edge bulges about the middle; towards the outer margin is a series of six ocelli set in a broad transverse patch of pale ochreous, the first ocellus near the costa is the largest, but does not greatly exceed the fourth and fifth, all have elongated white pupils and the sixth is double; a brown line, preceded by a whitish one, and followed by one of pale ochreous, parallel with outer margin; fringes as above.

*Female.* Apical third of primaries paler than in the male, with a whitish costal dot on its inner edge, outer margin of secondaries more angulated; the under surface is pale brown, central third of primaries darker, enclosing a whitish bar which crosses the discoidal cell; secondaries with the costal mark of the male outlined in and partly filled up with brown.

Expanse 62-68 millim.

Allied to *L. syrcis*, Hew.

Occurs at Chang-yang in June, and appears to be a very local species, as my collectors failed to meet with it in any other part of China visited by them.

### **Lethe syrcis.**

*Lethe syrcis*, Hewitson, Exot. Butt. iv., *Deb.* pl. iii. figs. 13, 14, ♀; Oberthür, *Etud. d'Entom.* vi. pl. vii. fig. 3 (1881).

“Upperside. Female, pale rufous-brown. Anterior wing crossed transversely beyond the middle by two bands of brown; the outer margin and a submarginal line brown. Posterior wing with a band of fine black blind ocelli, and two minute anal spots, four of the ocelli large, the middle one small, all bordered with yellow: a marginal band of pale yellow traversed by a black line; the margin also black. Underside lilac-yellow: both wings crossed before the middle by a linear rufous band. Anterior wing with the bands as above. Posterior wing crossed at the middle by a curved angular rufous band, followed by a band of five ocelli: two (the first large) near the costal margin, the third small and imperfect, the fourth at the anal angle bipupillated, each with the white pupil large, the iris yellow with a rufous border; the outer margin as above. Expanse  $2\frac{8}{10}$  inches.” (*Hewitson, l. c.*)

Hewitson describes and figures the female only, but except that the male is a little darker in colour, and the transverse markings less distinct, there is no appreciable difference between the sexes. Oberthür figures an example of the female in which the small (third) ocellus of secondaries is absent. All my specimens are without this ocellus; in some specimens there is a small but distinct ocellus at anal angle, and in one example the fifth ocellus has a small whitish pupil. On the under surface the ocellus at anal angle is always distinct, the third always absent and the fourth often faint.

This species has been received from various localities throughout China, ranging from Ningpo to Moupin. It is found in June and July.

### **Lethe manzorum.**

*Satyrus manzorum*, Poujade, Ann. Soc. Ent. Fr. 1884, p. cxxxiv.

*Pararge manzorum*, Oberthür, Etud. d'Entom. xiii. p. 41, pl. ix. fig. 100 (1890).

“Envergure: 38 mill.—Ailes minces, dessus d'un brun clair presque diaphane. Supérieures en triangle allongé, entières; bord externe ayant, un peu avant la frange, une ligne vague, rembrunie, se fondant insensiblement avec la teinte générale; une autre bande brune, irrégulièrement ondulée, à direction oblique et fondue intérieurement, traverse l'aile à peu près au deux tiers, à l'extrémité de la cellule discoïdale qui est elle-même occupée par deux lignes transverses brunes. Cette bande est bordée extérieurement de taches irrégulières d'un jaune d'ocre pâle plus ou moins marquées et quelquefois presque effacées. Un petit œil jaune d'ocre pupillé de noir est situé à l'angle apical. Ailes inférieures coupées presque carrément, légèrement dentées, la dent médiane plus accusée; bord externe orné de six taches rondes, brunes, inégales et contigues, chacune entourée d'un cercle de jaune d'ocre: celle de l'angle anal est la plus petite, la précédente est la plus grande et largement pupillée de blanc. Une petite bande orangée, finement limitée par deux lignes noires et d'un liséré interne verdâtre argenté, précède la frange qui est d'un brun clair. Dessous roux verdâtre très clair. Ailes supérieures ayant quatre bandes transverses d'un fauve rougeâtre: l'une longeant le bord externe, l'autre oblique un peu après l'extrémité de la cellule, et les deux dernières dans la cellule même, ailes inférieures avec deux bandes de même couleur: l'une, un peu courbe, occupant le tiers extérieur et l'autre partant de la côte et s'arrêtant dans la cellule près de son extrémité. Deux gros yeux noirs, suivis chacun d'un très petit, largement pupillés de

blanc à iris jaunâtre finement cerclé de brun, occupent les angles. Frange des quatre ailes brune, précédée d'un liséré orangé limité intérieurement aux inférieures par une fine ligne verdâtre argentée.

“Plusieurs mâles. Mou-Pin. (*Poujade, l. c.*)

*Female.* Similar to the male, but the dark transverse band beyond the middle of the primaries is followed by a broad interrupted yellowish band.

Occurs at Chang-yang, Central China, in June, and at Moupin and Wa-shan, Western China, in June and July.

### **Lethe gemina.** (Plate XII. fig. 8, ♂.)

*Lethe gemina*, Leech, Entomologist, xxiv., Suppl. p. 24 (1891).

*Male.* Pale brownish, darker on the external margin of all the wings; the primaries have a dusky angulated fascia beyond the middle, and a black spot ringed with fulvous towards apex: the secondaries have four large black submarginal spots, set in fulvous rings and arranged in pairs; the fourth spot has a white centre, and the rings of the second and third are connected by a fulvous patch which encloses a small black dash in its upper portion; there is a small black spot ringed with fulvous above anal angle, and a broad fulvous line, edged internally with black, and preceded by a greyish line parallel with outer margin. Under surface paler than above; the primaries have a broad pale violet-grey submarginal band from the apical ocellus to inner margin; a fulvous line, bordered internally with black and pale violet-grey, parallel with outer margin: secondaries have a large ocellus at outer angle, and a similar one, together with a minute one, at anal angle; these ocelli are bordered with pale violet-grey, and preceded by a curved and angulated brown band; discal linear spot brown, followed by a pale violet-grey patch.

Expanse, ♂ 56-66 millim., ♀ 70 millim.

One male specimen captured at Moupin, in July, and four males and one female at Omei-shan.

### **Lethe violaceopicta.** (Plate III. figs. 5 ♂, 6 ♀.)

*Debis violaceopicta*, Poujade, Ann. Soc. Ent. Fr. 1884, p. clviii.

*Lethe calisto*, Leech, Entomologist, xxiv., Suppl. p. 23 (1891).

“Envergure: 52 mill.—Ailes supérieures en triangle presque rectangle, ailes inférieures arrondies et faiblement dentelées.

“Dessus d'un brun légèrement olivâtre, uniforme. Ailes inférieures bordées d'un liséré fauve peu marqué, surmonté de cinq taches triangulaires d'un brun noirâtre. Franges blanches, entrecoupées de brun.

“Dessous d'un brun olivâtre, s'éclaircissant de la côte au bord interne aux ailes supérieures; celles-ci sont traversées par une série de taches pâles peu accentuées, disposées en quart de cercle, partant de la côte un peu après l'extrémité de la cellule et se dirigeant vers l'angle interne. Entre cette série de taches et l'angle apical existe, au milieu, touchant la côte, une tache lilas, triangulaire, allongée, un peu courbe et bordée extérieurement par trois yeux noirs largement pupillés de blanc, à iris fauve. Les ailes inférieures sont plus foncées vers le bord externe et traversées, latéralement au milieu, par une bande courbe, sinueuse, d'un brun velouté. Base traversée, jusqu'au milieu, par quatre lignes transverses, très irrégulièrement

sinueuses, d'un lilas soyeux ; bord externe orné de six yeux noirs pupillés de blanc, à iris orangé, et largement cerclés de lilas, celui qui est situé à l'angle interne, formé de deux petits yeux contigus. Bordure des quatre ailes fauve, finement limitée de brun et précédée d'un liséré lilas parallèle aux sinuosités des ailes. Antennes brunes, annelées de blanc ; corps et pattes d'un brun verdâtre.

“Deux ♂ de Mou-Pin, capturés par M. l'abbé David.—Coll. du Muséum.” (*Poujade, l. c.*)

*Lethe calisto*, Leech.—*Male*. Allied to *Lethe nicetas*, Hew., with which species it agrees in many respects, but may be distinguished therefrom by the rounder wings, absence of any red in the composition of the brown coloration of all the wings, and of black spots on secondaries ; further, the primaries are devoid of markings, and the fringes of all the wings are white chequered with blackish. On the under surface the primaries are fuscous grey-brown, with markings similar to those of *L. nicetas* : the secondaries are grey-brown, with the basal half traversed by four silvery-lilac lines ; the outermost of these lines, sinuate to first median nervule and bidentate between that point and the abdominal margin, is followed by a dark brown band, which is broad towards costa and attenuated towards abdominal margin ; there are no yellow markings between this band and the well-formed ocelli, which are placed further from the margin.

*Female*. Primaries have a yellow macular submarginal band, slightly angulated below costa, and a short oblique band, of the same colour, from middle of costa extending almost to the submarginal band ; there is a black spot at outer angle of secondaries. On the under surface of secondaries there are some yellow spots, as in the same sex of *L. nicetas*.

Expanse, ♂ 60 millim., ♀ 64 millim.

Appears to be a scarce species. I have only received eight male specimens and one female ; these were taken at Omei-shan, Wa-shan, and Pu-tsu-fong in June and July 1889. M. Poujade's types are from Moupin.

### **Lethe siderea.**

*Lethe siderea*, Marshall, Journ. Asiat. Soc. Beng. xlix. p. 246 (1880) ; Marshall & de Nicéville, Butt. Ind. i. p. 159 (1882) ; Elwes, Trans. Ent. Soc. Lond. 1888, p. 315, pl. ix. fig. 3.

“*Male*. Differs from *L. sidonis*, ♂, in being smaller, and in the uniform absolutely spotless upper surface, somewhat darker towards the outer margin. Underside uniform brown. Fore wing entirely wanting the discal bands and the whitish spots on the costal margin ; the only markings being three minute submarginal white spots beyond the cell, the middle one faintly ringed with black ; a single yellowish marginal line edged on both sides with dark brown, and within this a distinct silvery-lilac submarginal line extending from the apex to the second median nervule. Hind wing with all the silvery streaks brighter and distinctly lilac ; the submarginal silvery line very slightly dilated at the anal angle ; the ocelli all blacker and less prominently pupilled with white. The second and third ocelli much nearer the margin than the others, giving the line of ocelli a strong curve outwards, the silvery band within following this curve, and deeply sinuated outwards beyond the cell ; the ground-colour being uniform brown, scarcely at all darkened at the edges of the silvery lines. The hind wing less distinctly caudate. Expanse 2·1 inches.” (*Marshall & de Nicéville, l. c.*)

One example of this Sikkim species was taken by Herr Kricheldorf at Moupin in July. The ocelli on the under surface of secondaries are larger than in typical specimens.

Mr. Elwes (*l. c.*) says:—"This species has hitherto only been found in Tendong in Native Sikkim by Möller's collectors, at about 7000 feet in the rainy season. The female remains unknown. In 1886 it was taken as late as November. All that I have seen are, though very nearly allied to *sidonis*, smaller, and distinguished by the different markings and duller colour of the underside."

Genus ZOPHOESSA.

*Zophoessa*, E. Doubleday, Gen. Diurn. Lep. p. 362 (1851).

"BODY moderate-sized; eyes hairy; fore wings elongate-triangular; hind wings tailed.

"HEAD small, wider in the male than in the female, hairy, not tufted.

"Eyes prominent, hirsute.

"Antennæ not half the length of the fore wings, very slender; terminated by a distinct, elongate, slender club.

"Labial palpi long, slender, compressed, elevated obliquely, considerably higher than the level of the top of the eyes; the long second joint not clothed behind with a tuft of hairs, front with numerous long hairs; terminal joint minute.

"THORAX short, very convex, finely hairy.

"Fore wings large, elongate-triangular. Fore margin but slightly curved; apical angle obtuse. Apical margin long, slightly concave, not scalloped; inner angle rounded. Inner margin nearly straight. Costal vein rather dilated at the base, extending to the costa a little beyond the middle. Postcostal vein with the first and second branches arising near the middle of the wing; the second close to the anterior extremity of the discoidal cell; third and fourth branches arising at equal distances apart beyond the cell. Upper discocellular extremely short, oblique; middle discocellular rather longer, less oblique, straight; outer discocellular very much longer, nearly straight, almost transverse, uniting with the third branch of the median vein at about the same distance from its base as exists between the first and second branches; the third branch being angulated at the place of junction, beyond which it is slightly curved.

"Hind wings subovate. Costal margin slightly arched. Outer margin scalloped; the middle, at the extremity of the third branch, being deeply emarginate. Precostal vein very short, furcate at the tip. Costal vein extending to about two thirds of the length of the costa. Postcostal vein branching at a considerable distance from the base. Upper discocellular short, curved, but rather longer than the space between the branches of the postcostal vein; lower discocellular vein longer than the upper, curved, uniting with the median vein close to the origin of the third branch, which is slightly curved, and extends to the outside of the tail.

"Fore legs of the male very minute. The femur and tibia of equal length, slightly hairy. The

tarsus longer than the tibia, very hairy and brush-like. *Fore legs* of the female not longer than those of the male, cylindrical. The tibia externally clothed with a few hairs. The tarsus scarcely more than half the length of the tibia, scaly, rather dilated, and obliquely truncate at the tip, with a few very short rather thick spines nearly concealed by the scales.

“*Four hind legs* rather short, slender. Tibia with a few very fine spines on the underside; tibial spurs rather long. Tarsus armed on the sides beneath with rows of fine spines. Ungues elongated, curved, very acute, entire.

“**ABDOMEN** small and slender in the males, elongate-ovate in the females.” (*Doubleday, l. c.*)

### **Zophoessa gracilis.**

*Pararge gracilis*, Oberthür, *Etud. d'Entom.* xi. p. 23, pl. iv. fig. 19 (1886).

Fulginous brown: primaries have two dusky bars in the discal cell, the outermost closing the cell; beyond the middle is a dark transverse band edged externally with pale brown; two whitish spots near costa towards apex, and below these a series of four blind ocelli, the first and fourth often indistinct and sometimes entirely absent; secondaries have a submarginal row of four ocelli all with fulvous irides, but, with the exception of the fourth, usually without pupils. Under surface greyish: primaries have a broad whitish bar in the cell bordered on each side with dark brown, and the cell is closed by a narrow brown line; the transverse band is bordered with white; the four ocelli are usually well defined and are followed by a whitish band: secondaries are traversed by two brown lines, which are parallel from costa to middle of the wing, and then converge towards anal angle, the enclosed space is partly filled in with whitish, and contains a short brownish dash in the centre; there are six submarginal complete ocelli bordered inwardly by a series of whitish lunules, and outwardly towards the costa with brownish, and towards anal angle with deep fulvous.

Expanse 54–60 millim.

Although a large number of this species have been received, no example of the female has yet been detected among them.

A common species in Western China, occurring up to above 9000 feet.

### **Zophoessa jalaurida.**

*Zophoessa jalaurida*, de Nicéville, *Journ. Asiat. Soc. Beng.* xlix. p. 245 (1880); Marshall & de Nicéville, *Butt. Ind.* i. p. 166, pl. x. fig. 19, ♂ (1882); Elwes, *Trans. Ent. Soc. Lond.* 1888, p. 320, pl. viii. fig. 4.

“*Male.* Upper surface of *both wings* deep brown. *Cilia* brown, ochreous at the interspaces. *Fore wing* with a somewhat constricted band across the cell beyond its middle, widely bordered on both sides with a deeper shade of the ground-colour. A transverse discal band extending from the costa to the inner margin, divided anteriorly by the veins into four somewhat square-shaped spots, below the third median nervule consisting of diamond-shaped spots. A sub-apical spot divided into three portions by the veins, followed by four small round spots, the third from the apex slightly the largest; all the bands and spots ochreous. An indistinct suffused submarginal dark brown line. *Hind wing* with an indistinct dark bar across the cell near its end, the discocellular nervules bordered on both sides with deep brown, and a

band beyond the cell across the wing also of a deeper brown than the ground-colour. Six round black spots (the anal one small and indistinct) with pale circumferences placed upon a somewhat lighter-coloured band than the rest of the wing. The margin dark brown with two ochreous lines divided by a dark brown line. Under surface paler brown than above and without any sheen. *Fore wing* with the bands and spots as above, only more distinct and yellower; the first two of the four round subapical spots developed into ocelli with lilasene pupils and placed on a light band. *Hind wing* slightly greenish on the abdominal margin and base; an irregular streak at the base wide below the cell; parallel to this is a line from the costa to the median nervure; beyond this a **W**-shaped figure, the first line of the **W** being in the cell, the last ending near abdominal margin. Outside the cell a transverse streak, somewhat straight from the costa (where it is very broad) to the third median nervule, to which point it gradually decreases, beyond this it is very narrow and sinuous; the first median nervule is inwardly bordered from its origin to the point where it is cut by the last-named streak by silvery-white, which is the colour of all the lines and streaks. A band of six black ocelli, pupilled with blue, with yellow irides and narrowly circled with brown and then grey lines; the fourth from the outer angle with the blue pupil very large and nearly covering the black portion, the sixth bipupillated. A submarginal lilascent line extending up the abdominal margin, beyond which are two dark fine lines with a broader ferruginous line between them." (*de Nicéville, l. c.*)

The *female*, which I believe has not been hitherto recorded, agrees with the male excepting that the pale markings of primaries are larger and whiter.

Expanse, ♂ 54 millim., ♀ 56 millim.

This species, which has so far been considered peculiar to the Himalayas, occurs sparingly at several places in Western China, from June to August. Chinese specimens agree in all important characters with examples from Sikkim, but the upper surface is rather olivaceous in tint, and on the under surface of secondaries the transverse streak outside the cell is divided into two portions by the interposition of a greenish-brown patch, and the first median nervule is not bordered with silvery-white.

Mr. Elwes (*l. c.*) says that *Zophoessa jalaurida* is very abundant all along the Singalelah Range between Sikkim and Nepal, where it occurs in July and August at elevations ranging from 9000 to nearly 12,000 feet; it "frequents the opener places in the forest, flying quickly in dull and rainy weather, and settling on the paths, where several collect together at any ordure. It settles on bamboo, and also on rocks, where many might be found on wet days and in the evening, and bottled like Moths."

### **Zophoessa armandina.**

*Debis armandina*, Oberthür, Etud. d'Entom. vi. p. 16, pl. vii. fig. 6 (1881).

*Male*. Dark silky brown tinged with olive, cell of primaries closed by a dark bar; a dark transverse serrated band bordered outwardly with yellowish runs from the middle of costa to

inner margin; a yellowish-white apical streak; dark submarginal band intersected by the nervules: secondaries have an elbowed central transverse line; a submarginal series of five black spots encircled with pale brown and beyond is a dark band; fringes white variegated at ends of the nervules with brown. Under surface: primaries dark ochreous brown; a broad whitish bar at extremity of cell bordered on both sides with blackish brown, transverse band as above, but more distinctly bordered externally with whitish; apical mark white: secondaries have two violet-grey subbasal lines, a short dark brown central band from the costa edged outwardly with violet-grey, a submarginal dark brown angulated band externally edged with violet-grey, each of the six ocelli ringed with the latter colour; the outer marginal line is reddish brown, and is edged internally by a greyish-violet line, which expands into a lunule in the first and second median interspaces, and terminates in a triangular mark at anal angle. The *female*, which does not appear to have been hitherto recorded, is paler than the male, the border to central fascia is broader, pale yellowish in colour, and most distinct towards costa; the ocelli on secondaries are rather larger.

Expanse, ♂ 60 millim., ♀ 54 millim.

M. Oberthür has compared this species with *Lethe (Debis) nicetas*, Hew.; but it appears to be congeneric with *Zophoessa jalaurida*, de Nicéville, which also occurs in China.

It is widely distributed and not uncommon in Western China during the months of June, July, and August, occurring at altitudes ranging from 4000 to 8000 feet.

### **Zophoessa helle.** (Plate VII. fig. 4, ♂.)

*Zophoessa helle*, Lecch, Entomologist, xxiv., Suppl. p. 1 (1891).

Closely allied to *Zophoessa armandina*, Oberth., but the boundary of the basal two thirds of primaries is determined by a fairly broad black transverse band, which runs obliquely outwards from the costa to below the end of cell, from whence it is only slightly indented to inner margin; this transverse band is bordered externally with deep fulvous; the bar in discal cell is straight and very clearly defined: the black marginal spots on the secondaries are rather smaller, and there is no reddish line on the outer margin; the fringes are white, more decidedly chequered with brownish than in *Z. armandina*, and the apex of primaries is brown instead of white. On the under surface there are two small ocelli below white apical spots; the discal bar is broad, straight, whitish, and very conspicuous; two pairs of silvery-violet lines traverse the secondaries, but the inner one of the second pair is not continued beyond the median nervure, above which the space between this pair is clouded with silvery-violet; the second, third, and fourth ocelli are sometimes clouded with silvery-violet, and the pupils of all are bluish.

In the female the fulvous border to central band of primaries is rather broader than in the male. Expanse 60 millim.

Widely distributed and common in Western China, from June to August, occurring at various altitudes ranging up to 10,000 feet.



**Zophoessa procne.** (Plate VII. fig. 3, ♂.)

*Zophoessa procne*, Leech, Entomologist, xxiv., Suppl. p. 2 (1891).

*Male.* Allied to *Zophoessa helle*, but the boundary of basal two thirds of primaries is rather more irregular, though less indented, than in *Z. armandina*, and the fulvous border is broken up into spots; the apical spots are fulvous, and there are two other fulvous spots below; the submarginal blackish band is also broken up into spots; the dusky bar in discal cell is incurved, and is preceded by a dusky patch. Below the apical white spots on under surface of primaries are two other white spots, the upper of these is encircled with black; the pale primrose discal bar is broad, incurved, and surrounded with brownish. On the under surface of secondaries there are two parallel lustrous wavy lines towards the base; from the middle of the costa a broad pale primrose patch extends to subcostal nervule, from whence two almost parallel undulating lustrous lines run to the inner margin; the space between these lines is dusted with brownish grey.

*Female.* Similar to the male, but the fulvous markings are replaced by white, and are rather larger. Expanse 60 millim.

Occurs at Wa-shan, June; Huang-mu-chang, July; Ta-tsien-lu, July and August.

A common species; its area of distribution in Western China is almost identical with that of *Z. helle*, and it occurs during the same months, *i. e.* June to August.

**Zophoessa albolineata.**

*Debis albolineata*, Poujade, Ann. Soc. Ent. Fr. 1884, p. clv.

*Debis andersoni*, Poujade, Ann. Soc. Ent. Fr. 1885, p. cxliii.

*Debis albolineata*, Oberthür, Etud. d'Entom. xiii. p. 41, pl. x. fig. 111 (1890).

“Envergure: 63 mill.—Très voisin du *D. luteofasciata*; ailes inférieures coupées plus carrément; avec les denteleures plus inégales, celle du milieu également la plus accusée; couleur générale semblable, laissant voir, par transparence, les lignes et taches du dessous.

“Couleur du dessous d'un brun verdâtre clair et luisant. Aux ailes supérieures cinq fascies d'un blanc terne disposées comme chez le *D. luteofasciata*; le long du bord externe, cinq petits yeux noirs, pupillés de blanc, faiblement cerclés de fauve. Ailes inférieures avec deux fascies blanchâtres: l'une, presque médiane, part de la côte et se dirige vers l'angle interne; l'autre, sinuée, longe le bord externe et renferme, entre elle et celui-ci, une série de cinq yeux noirs, pupillés de blanc, diminuant de grosseur de l'angle interne à l'angle externe et faiblement cerclés de fauve. Contre cette dernière fascie et touchant la côte, un grand œil semblable est enclavé entre les deux premières branches de la nervure sous-costale. Bordure jaunâtre avec deux lisérés bruns, frange blanchâtre.” (*Poujade, Ann. Soc. Ent. Fr. 1884.*)

The female has two pale transverse bands on upper surface of primaries, both are fainter towards inner margin, where they approximate; the ocelli on secondaries are larger.

Poujade (Ann. Soc. Ent. Fr. 1885, p. cxliii) seems to have considered that his *albolineata* was identical with *andersoni*, Atkinson; but, as has been

pointed out by Oberthür (*l. c.*), the two insects, although certainly very similar in many respects, are specifically distinct. Apart from their different tint on the upper surface they are easily separated by the colour and markings of the underside: *andersoni* is of a golden brown with brilliant silver transverse lines; but *albolineata* is sombre olive-brown, with silky white transverse lines.

Occurs sparingly at Chang-yang, and is widely distributed and not uncommon in Western China.

### **Zophoessa argentata.** (Plate VII. fig. 8, ♂.)

*Zophoessa argentata*, Leech, Entomologist, xxiv., Suppl. p. 1 (1891).

Allied to *Zophoessa (Debis) albolineata*, Poujade, but smaller; the male has two whitish bands on the primaries (in this respect resembling the female of *Z. albolineata*), approximating towards the inner angle; the outermost is followed by a series of five black dots. Secondaries have five black marginal spots, as in *albolineata*, but they are set in pale rings, and the white pupils of the fourth and fifth are more distinct; a pale line, parallel with outer margin, expands into a band towards anal angle, where it becomes bright fulvous. On the under surface of primaries the markings of this species are somewhat similar to those of *Zophoessa (Debis) andersoni*, Atkinson, but on the secondaries the costal, median, and submedian nerves are mapped out in silver; the central silver fascia is broad, but does not extend beyond the third median nervule; a slender transverse silver streak runs from the base of the first median nervule, and almost parallel with that vein, nearly to the anal angle; a silver submarginal band, interrupted by the nervules and bordered internally with dark brown, is followed by a transverse series of silver points set in blackish rings.

Expanse, ♂ 54 millim., ♀ 58 millim.

This was not an uncommon species in some parts of Western China in the year 1889, and was on the wing from June to August, occurring up to an elevation of 7000 feet. The species was not observed by my collectors in 1890.

### **Zophoessa luteofasciata.**

*Debis luteofasciata*, Poujade, Ann. Soc. Ent. Fr. 1884, p. cliv.

*Debis luteofasciata*, Oberthür, Etud. d'Entom. xiii. p. 41, pl. x. fig. 108 (1890).

“ Envergure: 57 mill.—Ailes supérieures en triangle allongé, entières, ailes inférieures à bord externe presque arrondi, avec cinq dents anguleuses, dont la médiane plus accusée.

“ Dessus d'un brun clair légèrement verdâtre et luisant, laissant voir, par transparence, les fascies et les taches ocellées du dessous. Sur la côte des ailes supérieures, près de l'angle apical, existe une petite tache jaune clair. Frange blanchâtre, entrecoupée de brun à l'extrémité de chaque nervure.

“ Dessous des quatre ailes du même brun mais non luisant, allant en s'éclaircissant de la côte au

borde interne. Ailes supérieures avec cinq bandes d'un jaune verdâtre clair : deux, étroites, le long du bord externe ; une autre, plus large, presque parallèle à celui-ci, part de la côte près de l'angle apical, et vient s'arrêter sur la deuxième branche de la nervure médiane ; un peu après la cellule discoïdale, la quatrième fascie, qui est un peu sinueuse, prend naissance à la côte, et se dirige obliquement vers l'angle interne, en s'arrêtant un peu avant, la cinquième occupe transversalement le tiers antérieur de la cellule et est suivie par une tache plus ou moins triangulaire située le long de la côte au milieu de la cellule, entre les deuxième et troisième bandes, à partir de l'angle apical, il y a quatre yeux bruns pupillés de blanc et entourés d'un iris peu accentué, d'un jaune plus ou moins roux.

“ Ailes inférieures avec les nervures et des fascies du même jaune clair. Une bande courbe part de la côte au tiers basilaire de l'aile et se dirige vers l'angle interne en s'arrêtant entre la nervure sous-médiane et la dernière branche de la nervure médiane ; cette bande se ramifie à la rencontre de l'extrémité de la cellule. Le tiers extérieur de l'aile est orné de cinq grands yeux inégaux, noirs, pupillés de blanc, à iris jaune et cerclés de brun. Ces yeux sont placés sur une large bande jaune ; contre cette bande, et touchant à la côte, existe un œil plus gros que les autres, noir, pupillé de blanc et à iris brun et fauve, largement cerclé de jaune. Bordure jaune avec deux lisérés bruns ; l'espace entre cette bordure et les cinq ocelles est saupoudré de jaune ainsi que le bord abdominal ; l'angle interne est nuancé de fauve. Frange des quatre ailes jaune entrecoupé de brun.

“ Corps du même ton que le dessus des ailes, avec reflets verdâtres.

“ Antennes brunes, annelées de blanc ; poitrine, abdomen et cuisses d'un brun jaunâtre ; palpes, jambes et tarsi d'un jaune clair.

“ 2 ♂. Mou-Pin. (Abb. Arm. David). Nat. Mus.” (*Poujade, l. c.*)

This species would seem to be very local, as my collectors failed to meet with it.

### **Zophoessa dura.** (Plate VII. fig. 5 ♂, 6 ♀, vars.)

*Zophoessa dura*, Marshall, Journ. Asiat. Soc. Beng. ii. p. 38, pl. iv. fig. 2, ♂ (1882) ;

Elwes, Trans. Ent. Soc. Lond. 1888, p. 319, pl. ix. fig. 1.

*Debis moupinensis*, Poujade, Ann. Soc. Ent. Fr. 1884, p. cxl.

*Zophoessa libitina*, Leech, Entomologist, xxiv., Suppl. p. 2 (1891),

Var. **moupinensis**, Poujade.—“ Envergure : 65 mill.—Ailes supérieures triangulaires, entières, à bord externe un peu sinué ; inférieures coupées carrément, avec une très forte dente médiane suivie de deux plus petites situées vers l'angle interne.

“ Dessus d'un brun sombre velouté, plus pâle au bord externe des ailes supérieures et dans la seconde moitié des inférieures ; celles-ci ayant trois petites taches vers le bord externe et une bordure assombrie traversée par un liséré plus pâle.

“ Dessous brun olivâtre ; ailes supérieures partagées au delà du milieu par une teinte plus sombre obliquant vers l'angle interne et se fondant insensiblement vers la base, cette teinte est suivie d'une bande triangulaire d'un lilas soyeux qui part de la côte en s'amointrissant jusque vers le milieu de l'aile ; une bande oblique du même couleur traverse la cellule discoïdale ; angle apical légèrement teinté de fauve avec une tache blanche à la côte et un très petit œil pupillé de blanc et cerclé de fauve ; bord externe assombri avec un liséré plus pâle qui devient lilas vers l'angle interne. Ailes inférieures traversées latéralement au milieu par une bande

sinueuse d'un brun velouté; base traversée jusqu'au milieu par quatre lignes très sinueuses d'un lilas soyeux; bord externe orné de cinq yeux noirs à iris orangé, pupillés de blanc et saupoudrés de lilas; chaque œil est largement entouré d'un cercle de cette dernière couleur. Bordure fauve, précédée d'un fin liséré lilas. Frange des quatre ailes blanche entrecoupée de brun en dessus et dessous.

"Antennes brunes annelées de blanc.

"Un ♂. Mou-Pin. (Abb. Arm. David.) Nat. Mus." (*Poujade, l. c.*)

In the Chinese form of this species (var. *moupinensis*, Pouj.) the male is smaller, and both sexes are darker; the outer margin of the primaries is straighter, and there is but one pale spot on the costa; the external margin of secondaries is less angulated in contour, and the ocelli are represented by black dots. On the under surface the coloration and markings are very similar to these characters in typical *dura*, but the primaries have a reddish apical dash, the ocelli are indistinct and only two in number; all the ocelli on the secondaries, excepting the sixth, have a faded appearance.

Expanse, ♂ 70 millim., ♀ 80 millim.

Chinese specimens agree almost exactly with an example of *dura* in the collection of the late Herr. Otto Möller which I had not seen when I described the insect under the name of *libitina*. Subsequent study and comparison of the Chinese specimens with *dura* lead me to the opinion that both are forms of one species, i. e. *Z. dura*. *Moupinensis*, Pouj. (= *libitina*, Leech), has rather shorter "tails" than *dura*, and the upper surface is somewhat darker in colour, but in other respects there appears to be no difference of specific value.

Occurs sparingly at various places in Western China, and I have one female example from Chang-yang.

### Genus NEOPE.

*Neope*, Butler, Ann. & Mag. Nat. Hist. (3) xix. p. 166 (1867).

*Enope*, Moore, Cat. Lep. Mus. E. I. C. p. 228 (1857).

*Neope*, Moore, Proc. Zool. Soc. Lond. 1865, p. 770.

"Alæ magnæ: anticæ elongatæ, subtrigonatæ, costa paulum convexa; margine postico denticulato; margine interiore convexiusculo, rarius recto; venis ad basim vix tumidis, velut in *Debe* positis; maculis ocellisque ut in *Lasiommata*.

"Alæ posticæ forma venisque *Debis*, *Samionis*, *Syrigidisve*.

"Alæ subtus ocellis submarginalibus; area basali striis fasciisque irregularibus scripta. Antennæ clava gradatim formata." (*Butler, l. c.*)

Type *N. bhadra*.

### **Neope yama.** (Plate VIII. fig. 1, ♂ var.)

*Zophoessa yama*, Moore, Cat. Lep. E. I. C. i. p. 221 (1857); Marshall & de Nicéville, Butt.

Ind. i. p. 169, pl. x. fig. 21, ♂ (1882).

“Differs from *Zoph. sura* in having no caudal appendages to the hind wing; the underside having on the fore wing three pale bands crossing the discoidal cell, and four submarginal ocelli: the hind wing having the basal portion irrorated with minute pale dots, the transverse streaks more oblique, and the ocelli, seven in number, are black, encircled with a pale and then a dark line, centred with a minute white dot, that at the anal angle being, as it were, geminated; ciliæ seen from upperside yellowish white. Sexes alike. Expanse 3 inches.” (*Moore, l. c.*)

The Chinese representative of this species differs from the Indian type; I therefore describe it as

Var. **serica**, var. nov. (Plate VIII. fig. 1, ♂.) The apex of primaries is more produced and the outer margin is oblique. The male is more fuliginous on the upper surface, and the black spots of secondaries are not so clearly defined as in the type. On the under surface the ground-colour has more olive in its composition.

Generally distributed and not uncommon in Western China, and has been taken at Chang-yang in Central China; occurring at various elevations from 5000 up to about 10,000 feet in May and June. In India the type is found in the Khasi Hills in May, and at Mussoorie; also recorded from the Himalayas in Kumaon.

### **Neope christi.**

*Neope christi*, Oberthür, Etud. d'Entom. xi. p. 25, pl. iii. fig. 18 (1886).

*Male.* Greyish brown with broad blackish outer margins to all the wings, and the discal area thickly felted with long silky hairs. The yellowish maculation is arranged exactly as in *N. simulans* (Pl. VIII. fig. 2). Under surface similar in pattern to that of *N. yama*, var. *serica* (Pl. VIII. fig. 1), but the pale markings are yellowish: the first ocellus is well formed, but the second is represented by a pale yellowish spot, the third, fourth, and fifth by round black spots set in large oval yellow patches. On the under surface of secondaries the median nervure and its branches and also the submedian are whitish; all the transverse markings are whitish, the most conspicuous being the broad external border to dark brown subbasal transverse band, which runs from costa to median nervure, and the costal portion of border to central transverse brown band; there are seven ocelli, all, except the seventh, with large white pupils.

The *female* similar in colour and markings, but the yellow spots are rather larger, and the nervules are yellow as far as the blackish outer marginal area.

Expanse, ♂ 80 millim., ♀ 84 millim.

This species is generally distributed in Western China, occurring during the months of May and June and also in August; it appears to be very constant both in colour and markings.

### **Neope simulans.** (Plate VIII. fig. 2, ♂.)

*Neope simulans*, Leech, Entomologist, xxiv., Suppl. p. 66 (Sept. 1891).

Allied to *N. christi*, Oberth., which it almost exactly resembles on the upper surface, but it is

smaller, and the venation is not marked with white on the central third of the wings. On the under surface of primaries the yellow markings are deeper in colour, and the black ones are more intense; the ocelli are without pupils: the white markings of the secondaries are replaced by grey, and are narrower; the basal transverse olive-brown band is broken up into three spots; the ocelli are not pupillated, and the second ocellus is elongate.

Expanse, ♂ 70 millim., ♀ 74 millim.

Occurs in Western China, at Wa-ssu-kow, Omei-shan, Chia-kou-ho, and Chow-pin-sa, in June and July.

**Neope armandii.** (Plate VIII. figs. 5 ♂, 6 ♀, vars.)

*Satyrus armandii*, Oberthür, Etud. d'Entom. ii. p. 26, pl. ii. fig. 5 (1876).

*Neope khasiana*, Moore, Trans. Ent. Soc. Lond. 1881, p. 306; Marshall & de Nicéville, Butt. Ind. ii. p. 172 (1882).

*Neope armandii*, var. *fusca*, Leech, Entomologist, xxiv., Suppl. p. 65 (1891).

“*Neope khasiana*, Moore.—*Male*. Allied to *N. bhadra*. Upperside: markings on fore wing similar, the two streaks within the cell much less distinct, that crossing its middle almost obsolete; the streak between the lower median and submedian narrower, and confluent with its terminal spot; hind wing ochreous-yellow, with the costal border and apical end of exterior border brown, the immediate base of the wing ochreous-brown; a large oval dark brown spot below lower end of the cell, and a discal curved series of six round spots decreasing in size to a minute spot above anal angle. Underside similarly marked to *N. bhadra*, except that there are two subapical ocelli, the lower one situated between the upper and middle median veins; the three streaks crossing the cell are zigzag, and the posterior margin broadly ochreous; hind wing with a regular transverse subbasal ochreous-white fascia, the dark spot at end of the cell smaller and more prominent, the transverse series of ocelli also smaller, the interspace on both sides pale ochreous-brown. Expanse  $3\frac{1}{4}$  inches.

“*Hab.* Khasia Hills (*Austen*). In coll. Moore.” (*Moore, l. c.*)

The *female* differs from the male in having the yellow spots of primaries larger; the basal third is suffused with yellowish; there are two broad yellow dashes parallel with inner margin, and a large irregular patch at extremity of cell.

The type occurs at Moupin, Ta-chien-lu, and several other localities in Western China during July.

Var. **fusca.** (Plate VIII. figs. 5 ♂, 6 ♀.) Primaries much as in the type, but a trifle darker in colour; the secondaries are brown, instead of yellow as in the type, but the black spots are more or less completely encircled with yellowish. The general appearance of the upper surface is very like that of *Neope bremeri*, Feld. (Pl. VIII. fig. 7).

This form was obtained only at Chang-yang and Omei-shan in July and August.

**Neope bremeri.** (Plate VIII. fig. 7, ♂.)

*Lasiommata bremeri*, Felder, Wien. entom. Mon. vi. p. 28 (1862).

*Neope romanovi*, Leech, Entom. xxiii. p. 29 (1890).

“*Lasiommata bremeri*, Felder.—Alis supra fusciscentibus, maculis exterioribus subfusiformibus ochraceis, medio late fusco interruptis, subtus pallidioribus ochraceo lilascentique variis, figuris annularibus in cellula, striga discali valde flexuosa posticarumque altera basali fuscis, his ocellis octo distinctissimis, anticis ocellis quinque (secundo, quarto et quinto multo majoribus, distinctus), ciliis angustis albidis. ♂.

“Præcedentis vicaria in terra continenti. Unicum nostrum specimen prope Ning-po captum ab ea alis anticis apice productis, apud marginem externum paullum concavis, angulo earum interno distinctiore, colore pilositatis et venarum paginæ superioris fusco, maculis hujus exterioribus multo minoribus, pallidioribus, ocellis paginæ inferioris majoribus et magis distinctis, striga discali magis flexuosa, in anticis inter costam et plicam discoidalem superiorem subcontinua, absentia lunularum marginalium in pagina superiore alarum posticarum ciliisque angustioribus facile dignoscitur.” (*Felder, l. c.*)

*N. romanovi*, Leech.—*Male*. Chocolate-brown, with olive reflections and a metallic green tinge in certain lights; venation not ochreous, there are two transverse series of small yellowish spots on outward half of primaries, but those towards costa are ill-defined. Secondaries have a marginal series of large black spots, each spot edged internally and externally with yellowish, except that at outer angle, which is bordered on its hinder edge only. Under surface pale brown tinged with violet-grey. Primaries broadly streaked with ochreous grey along the inner margin; central brown band very narrow, bidentate near costa, then gently curved, emitting a short projection before its termination near anal angle; four submarginal ocelli, the second almost filled up with white; two brown sinuated lines parallel with outer margin. Secondaries with three yellowish-brown ringed spots at the base; the central band is grey-brown with a triple edging of brown, yellowish, and dark brown; seven very distinct submarginal ocelli.

*Female*. The inner series of spots on upper surface of primaries distinct.

Expanse, ♂ 74 millim., ♀ 80 millim.

Occurs in Western China at Omei-shan, Chia-ting-fu and Kwei-chow in July, and Moupin in August, also at Chang-yang and Ichang, Central China, in July. Felder's type was from near Ningpo.

**Neope oberthüri.** (Plate VIII. fig. 3, ♂.)

*Neope oberthüri*, Leech, Entomologist, xxiv., Suppl. p. 24 (1891).

*Female*. Closely allied to *Neope bremeri*, Feld. (= *romanovi*, Leech), with which species it agrees almost exactly in the markings of the upper surface, although the colour is darker. On the under surface the present species differs from *N. bremeri* in the following characters:—The primaries are reddish brown; the discal cell is crossed by three black bars, the outer one very broad; beyond the cell is a blackish transverse band, broadest on the costa, where it is outwardly bordered with white: there is a submarginal series of seven spots; the first is a small white one on the costa; the second, pale but ill-defined; third, a true ocellus with white pupil;

fourth, an irregular white blotch; fifth and sixth, large black spots surrounded with pale fulvous; seventh, a large pale fulvous patch. The secondaries are dark brown suffused with purplish, with blackish ill-defined transverse lines on the basal half of the wing; the limiting line is blackish, sinuate, bordered outwardly with whitish and inwardly with pale brown, and unites with a fairly large black spot about the centre of the wing; the ocelli are seven in number, and arranged in a true curve. Clubs of antennæ are black, tipped with reddish; in *N. bremeri* the clubs are entirely reddish. The sexes do not differ in appearance.

Expanse 80 millim.

The type, a female, was taken by Mr. Pratt at Omei-shan in July 1889. In 1890 Messrs. Pratt and Kricheldorf obtained a long series, chiefly males, at Omei-shan, Pu-tsu-fong, Moupin, and Chow-pin-sa in June, and at Wassu-kow in June and July.

### **Neope goschkevitschii.**

*Lasiommata goschkevitschii*, Ménériés, Cat. Mus. Petr. ii. p. 121, pl. x. fig. 4 (1855).

*Lasiommata goschkevitschii*, Felder, Wien. entom. Mon. vi. p. 28 (1862).

*Neope nipponica*, Butler, Ann. & Mag. Nat. Hist. (5) vii. p. 133 (1881).

*Neope goschkevitschii*, Pryer, Rhop. Nihon. p. 32, pl. ix. fig. 11.

“*Neope nipponica*, Butl.—Allied to *N. goschkevitschii*, rather smaller and shorter in wing; above considerably darker, with orange, instead of white fringe. Primaries below yellower, all the markings thicker and darker, the discoidal markings more uniform, the third being less zigzag or 3-shaped; secondaries with the discal ocelli smaller, and far more uniform in size; the base, abdominal area, subbasal spots, central belt, and external area filled in with blackish olivaceous; the external area washed with lilac; the pale band just in front of the ocelli spotted with brown and tinted with lilacine below the angle. Expanse of wings 2 inches 7-8 lines.” (*Butler, l. c.*)

Common all over Japan. There are several broods, and some specimens are much darker than others.

The species is very fond of settling on tree-trunks with its wings folded, and is very difficult to see when resting in this way, because of its colouring being in harmony with the bark upon which it is sitting.

### **Neope pulaha.** (Plate VIII. fig. 8, var.)

*Lasiommata ? pulaha*, Moore, Cat. Lep. E. I. C. i. p. 227 (1857).

*Neope pulaha*, Marshall & de Nicéville, Butt. Ind. i. p. 170, pl. xi. fig. 25.

*Neope ramosa*, Lecch, Entomologist, xxiii. p. 29 (1890).

Chinese specimens of this species vary considerably in size, ranging from 64 to 90 millim. Compared with the type the colour of upper surface is



uniformly darker, and the maculation is paler yellow. On the under surface the white markings are broader and more conspicuous. The males received from Chang-yang in 1889 appeared to be more closely allied to *Neope* (*S.*) *goschkevitschii*, Mén., and were described by me under the name of *N. ramosa*. However, now that I have seen an extensive series of Chinese specimens I am unable to find any specific difference between *ramosa* and *pulaha*, consequently the former will have to take its place as a local form of the latter.

**Var. ramosa.** (Pl. VIII. fig. 8, ♂.) Closely allied to *S. goschkevitschii*, Mén., from Japan, but the ground-colour is dark chocolate-brown, the spots on primaries are smaller, nearly orbicular, pale yellowish buff in colour, and each pair between the median nervules separated by a quadrate blackish spot. Secondaries have two pale yellowish-buff longitudinal patches and three spots; each of the former encloses an obscure ocellus, and the latter are arranged in a longitudinal series; below are three black spots decreasing in size to the anal angle, the first is partially, the second distinctly, and the third indistinctly surrounded with pale yellowish buff. Under surface blackish, variegated with white and yellowish buff; primaries have a white-centred black spot enclosed in a whitish ring near apex, and below this is a nearly square white spot followed by two pairs of yellowish-buff spots as above; secondaries have three basal spots as in *S. goschkevitschii*, but they are paler in colour and the lower one is much larger; the central band is greyish, very irregular in shape and bordered on each side with white.

Expanse 90 millim.

Two males taken in June and July, at Chang-yang.

A widely distributed species in Western China, occurring in July and August. In Central China it has only been found at Chang-yang. Colonel Lang states that in the Himalayas this species frequents dark forests of oak, sycamore, and horse-chestnut, affecting shade and pitching on trunks of trees (Ent. Mo. Mag. i. p. 182).

### **Neope agrestis.** (Plate VII. fig. 7, var.)

*Satyrus agrestis*, Oberthür, Etud. d'Entom. ii. p. 27, pl. ii. figs. 3 *a*, *b* (1876).

*Male.* Deep fuliginous brown; the venation yellowish on disc of primaries; beyond the cell there is a pale yellow oblique dash from the costa, and two spots of the same colour nearer the apex; five submarginal pale yellow spots—the first, third, and fourth each with a large black centre, the fifth with a small black dot; secondaries have a broad fulvous band on submarginal area reaching to the first median nervule, this band is interrupted by the nervules, and intersected by a series of large black spots which are united towards costa; a black spot ringed with fulvous above anal angle; fringes white chequered with dark brown at tips of the nervules. Under surface of primaries fuliginous grey, the cell is crossed by two broad bars, and filled up with pale fulvous, there is a pale fulvous cloud below yellowish median nervule; the ocelli, costal, and apical markings as above; secondaries fuliginous grey-brown, with three subbasal yellow spots; an ill-defined dark velvety angulated central fascia, which,

on the costa, is preceded and followed by a conspicuous white mark, below the outer of these marks is a white spot, and another white mark is placed at the edge of the fascia about the centre of the wing; seven submarginal blind ocelli with narrow fulvous irides are each followed by somewhat triangular chocolate-coloured spots; outer margin broadly blackish.

Expanse 62-66 millim.

Although I have had hundreds of this species, I have only seen one female, and this is of the form described below as

Var. **albicans**, var. nov. (Plate VII. fig. 7, ♂.) The spots on the primaries are larger and much paler in colour; there are some yellowish clouds in the discoidal cell, and the veins are yellow to the outer third of the wing; on the secondaries the spots are larger and paler than in the type, but not quite so pale as those on primaries. Under surface of primaries pale yellowish, with the typical markings rather narrower: of secondaries grey, varied with black and white markings, the white markings wider and more conspicuous than in the type.

Both the type and var. *albicans* occur at Chow-pin-sa and Ta-chien-lu in May and June, but I have received the type only from Pu-tsu-fong, and in Kwei-chow the variety appears to be the only form.

### **Neope muirheadii.** (Plate VIII. fig. 4 ♂, var.)

*Lasiommata muirheadii*, Felder, Wien. ent. Mon. vi. p. 28 (1862).

*Debis segonax*, Hewitson, Exot. Butt. iii., *Deb.* pl. i. fig. 5 (July 1862).

*Debis segonacia*, Oberthür, Etud. d'Eutom. vi. p. 14, pl. vii. fig. 4 (1881).

The following is Felder's description of the type:—

“Alis supra fusciscentibus, anticis maculis tribus subocellatis nigris in fascia dilutiore aliisque duabus costalibus albidis, posticis maculis exterioribus seriatis nigris, brunneo cinctis; subtus multo pallidioribus, figuris cellularibus strigisque binis exterioribus fusciscentibus diffuse albido limbatis, anticis ocellis tribus interjectis (duabus inferioribus inter ramos medianos sat magnis), posticis ocellis octo (?) minutis, sed distinctis. ♀(?)” (*Felder, l. c.*)

Var. **segonax**. “Upperside. Male, rufous brown; anterior wing with a white spot near the apex, and below it is a black blind ocellus; posterior wing with four oval black blind ocelli.

“Underside rufous, clouded with grey and brown; both wings crossed beyond the middle by a rufous band bordered on both sides, on its outer side with grey-white, both with a zigzag band near the outer margin, the outer margin and a parallel line dark brown: anterior wing with two rufous bands across the cell, enclosing a third band divided into four; four oval ocelli, the second obscure: posterior wing with three round spots of yellow near the base, followed by a broken rufous band; eight small ocelli, all black, with white pupils, the iris rufous. Expanse  $2\frac{9}{16}$  inches.” (*Hewitson, l. c.*)

Var. **felderi**, var. nov. (Plate VIII. fig. 4, ♂.) *Male*. Similar in colour to the type but tinged with golden; there is a pale spot on costa of primaries near apex, but there is no trace of any black spots on the wings; the secondaries are also without black spots in three specimens out of four, but in the fourth there are two distinct black spots near anal angle. Under surface paler

than in the type, and all the ocelli are much smaller; all the wings are traversed by a white band, which is broader than in the type; the dark transverse lines are more clearly defined.

*Female*. Paler, with two pale spots on the costa of primaries, from the first of these an indistinct pale narrow band runs to inner margin, and is continued across the secondaries; below the second costal spot is a black one, and below this again another white one. The black spots on secondaries are obsolescent, except as regards the second, which is always present.

Expanse, ♂ 84 millim., ♀ 90 millim.

Felder seems to have been a little uncertain about the sex of his type from the province of Tse-kiang, but his reference to a pale fascia seems to indicate a female, as I have not seen, among the numerous specimens I have received, a male with anything approaching a fascia on the primaries. In some specimens of the male there are no black spots on primaries (*segonacia*, Oberth.), and in others there are as many as four. On the secondaries there are sometimes four fairly large oval black spots encircled with dull ochreous, but often there is only one, which is placed on the first median interspace. Usually there are two whitish spots on the costa, and these are sometimes connected by a whitish dash, but in many specimens the inner one is absent.

Occurs at several places in Western China, and at Chang-yang, Ichang, and Kiukiang in Central China; but the var. *felderi* has been received only from Omei-shan, at which place both the other forms also occur.

### Genus RHAPHICERA.

*Rhaphicera*, Butler, Ann. & Mag. Nat. Hist. (3) xix. p. 164 (1867).

“Alæ anticæ elongato-triangulares, costa subconvexa; margine postico brevi, convexo; margine interiore subrecto; venis ad basim vix tumidis, velut in *Lasiommata* positis; venis disco-cellularibus obliquis: posticæ pyriformes, costa subrecta; margine postico denticulato; margine interiore subintegro: alæ supra velut in *Satyro* ♀, subtus velut in *Arge* magis scriptæ.

“Caput antennis alarum medium attingentibus, elongatis, tenuibus, clava gradatim formata; palpis elongatis, lanaribus, articulo apicali distincto brevi.” (*Butler, l. c.*)

### **Rhaphicera satricus.**

*Lasiommata satricus*, Doubleday, Hewitson, Gen. Diurn. Lep. p. 387, pl. lxiv. fig. 4 (1851).

*Rhaphicera satricus*, Butler, Ann. & Mag. Nat. Hist. (3) xix. p. 164, pl. iv. fig. 3 (1867); Marshall & de Nicéville, Butt. Ind. i. p. 175 (1882); Elwes, Trans. Ent. Soc. Lond. 1888, p. 322.

“MALE: UPPERSIDE rich dark orange-yellow; all the nervures black. *Fore wing* with a narrow black bar across the cell in prolongation of the first median nervule, and another much broader one in prolongation of the second; a broad irregular band beyond the cell from the

costa to the first median nervule, and sharply angulated outwardly at its middle on the third median nervule; a short subapical bar from the costa ending with a round spot between the discoidal nervules, a large round spot on the lower median interspace, and the outer margin irregular (narrowest on the lower median interspace), and the inner margin extending to the submedian nervure, black. *Hind wing* with a similar angulate band beyond the cell, narrow from the costa, almost obliterated above the discoidal nervure, broad and prominent across the median nervules; four large round submarginal spots—one on either side of the second subcostal, and one on either side of the second median nervule, and the outer margin, black; two narrow orange lines on the black margin; cilia orange. **UNDERSIDE.** *Fore wing* paler yellow; markings as on upperside, but the apex and outer margin also yellow, bearing a fine black line on the extreme margin, and another incomplete within it, and an irregular line much wider about the third median nervule, and following the outline of the dark border of the upperside; the lower submarginal spot having a small white pupil, and the upper one developed into a perfect ocellus, with a bluish-white pupil, yellow iris, and blackish outer ring. *Hind wing* bright golden brown, with a broad much paler streak from the base covering the entire cell, and extending almost to the outer margin; a line from middle of costal nervure across the cell, an irregular angulate line from the costa outside the cell to the submedian nervure, and two fine marginal lines black, a dusky sinuous submarginal line; six submarginal ocelli, the third (sometimes absent) and sixth smaller, and the sixth geminate, all black with prominent bluish-white pupil; yellow iris and blackish outer wing. **FEMALE** similar in colour and markings." (*Marshall and de Nicéville, l. c.*)

Probably a rare species in China; I only received one specimen, which was captured at Omei-shan in July. This example is rather smaller than Indian specimens; it has a small black spot on the secondaries placed between those which count second and third in the type, and all the black spots, excepting this additional one, have whitish pupils.

Mr. Elwes says of this species: "I found this not uncommon in Sinchul and Tonglo from 6000 to about 8000 feet in the end of July and August, and more abundant at 7000 feet near Rikisum in British Bhotan. It flies quickly with a darting flight about the forest-paths, settling on ordure and wet places, and returning when disturbed. It also settles to rest on damp shady rocks, and flies in wet and cloudy as well as in fine weather. I never saw the female."

### **Rhaphicera dumicola.**

*Satyris dumicola*, Oberthür, Etud. d'Entom. ii. p. 29, pl. iv. fig. 7 (1876).

*Male.* Deep fuliginous brown with pale fulvous lines and spots. Primaries with one longitudinal streak and two transverse bars in the cell; just outside the cell there is a small linear spot followed by four others (three linear and one round), and a series of five forming a semicircle before the apex; there is a twice interrupted streak in the submedian interspace, the basal portion containing a dash of the ground-colour; three spots in the lower and two in the upper

median interspaces; submarginal line distinct towards inner angle only. Secondaries with some oblique and transverse streaks on the basal area, and some spots and dashes on the central area; there are some indications of submarginal ocelli, and an interrupted deep fulvous line on the outer margin extending from third median nervule to submedian nervure. Fringes white, chequered with brown at the end of nervules. Under surface as above, but the markings are broader and paler on all the wings: primaries have three ocelloid spots towards apex, and a large black spot in first median interspace; secondaries have a submarginal series of spots deeper in colour than the patches upon which they are placed, each spot ringed with black, the first broadly so; there is a tawny marginal band on all the wings, widening out on the secondaries towards anal angle.

*Female.* The pale fulvous markings of upper surface are rather broader, and the submarginal line is better defined on all the wings.

Expanse, ♂ 56–66 millim., ♀ 57–64 millim.

I agree with M. Oberthür in considering that this species belongs to *Rhaphicera*, and have accordingly placed it in that genus.

Generally distributed and common in Western China; it also occurs in Chang-yang in Central China.

### Genus CALLARGE, gen. nov.

Primaries with the costal margin slightly convex, apex rounded; outer margin inwardly oblique in the male, rather rounder in the female; inner margin straight: secondaries elongate ovate. Neuration as in *Melanargia*, but the discoidal cell of primaries is narrower in proportion to its length, the first median nervule is curved upwards, and the subcostal nervure is nearer the costa; on the secondaries the discocellulars form an outwardly oblique line, and the third median nervule is sharply curved downwards. Palpi porrected, clothed with long hairs; terminal joint downy, of moderate length, and partly hidden by the hairs of the second joint.

Antennæ half the length of costal margin, terminating in a long, gradually thickened club, which at its stoutest part is not twice the thickness of the main shaft.

Eyes naked.

Type *C. sagitta*.

### **Callarge sagitta.** (Plate XII. fig. 1, ♂.)

*Zethera sagitta*, Lecch, Entomologist, xxiii. p. 26 (1890).

Creamy white; neuration, apex, and margins of primaries black; some black scales along the upper portion of discoidal cell, which is partially divided by a black bar across its centre, a black wavy submarginal band extending to the second median branch, and a zigzag black line before the outer margin: secondaries have the submedian and median nerve and branch broadly black, but the other nerves are only narrow, a black zigzag line on the outer margin forms a series of arrow-heads, of which the veins represent the shafts. On the under surface the colour is rather more yellow, and the venation, except median and branches, narrowly blackish, the lines of the upper surface only faintly reproduced.

Expanse 78–90 millim.

This species seems to be fairly common in the neighbourhood of Chang-yang.

I have an example from Wa-ssu-kow, and as this exhibits considerable deviation from the type, which does not appear to occur in Western China, I describe it as

Var. **occidentalis**, var. nov. All the wings have the outer third blackish, with the typical white coloration more ochreous, and on this portion of the primaries represented by spots; the neuration is also broadly bordered with blackish.

### Genus MELANARGIA.

*Melanargia*, Meigen, Eur. Schmett. i. p. 97 (1829).

*Argy*, Westwood, Gen. Diurn. Lep. p. 383 (1851).

“BODY elongate, moderately hairy. Wings large, slightly scalloped; white, with black markings.

“HEAD rather small, moderately hairy.

“EYES prominent, naked.

“LABIAL PALPI rather short, obliquely porrected, scarcely reaching above the level of the middle of the eyes, extending to about two thirds of the length of the head, remotely apart, the first and second joints but slightly clothed with long, erect, hairy bristles; the terminal joint one third of the length of the preceding, scarcely hairy, slender, acute, and naked at the tip.

“ANTENNÆ not half the length of the fore wings, slender, with the joints not very distinct; terminated by a long and very gradually formed rather slender club, finely carinated beneath on the inner edge.

“THORAX of moderate size, clothed with woolly hairs, especially in front. Wings large, rounded, and with the outer margin more or less scalloped.

“FORE WINGS with the costal margin moderately arched. The apical margin convex, more than two thirds of the length of the costa. Inner margin longer than the apical one. Costal vein moderately swollen at the base. Veins arranged as in *Chionobas*, except that the discoidal cell of the fore wings does not extend quite to the middle of the wing, which is marked towards the costa with a large black patch, traversed by the discocellular veins; the upper of which is very short and almost obsolete; the middle and outer one much longer, forming a nearly continuous curved line, varying, however, in its precise direction; the middle one emitting a short spur backwards into the discoidal cell, near its junction with the outer one. The median and submedian veins are not dilated at the base.

“HIND WINGS large, nearly rounded. Anal margin not incised near its extremity. Costal margin much arched. Costal vein not extending far beyond the middle of the costa. Discoidal cell much shorter than in *Chionobas*. The upper discocellular arising at a short distance from the base of the branch of the postcostal vein, and forming the slightly curved base of the discoidal vein; whilst the lower discocellular is longer than the upper, and united to the third branch of the median vein much nearer to its origin than the space between the first and second branches of the latter.

“*Fore legs* in both sexes exceedingly minute, concealed amongst the hairs of the breast; those of the male with the femur oval, compressed. Tibia about as long, broad and compressed, narrowed at the base. Tarsus as long as the tibia, gradually attenuated to the tip, where are several short bristles. *Fore legs* of the female shorter than those of the male, but rather broader. The tibia shorter than the femur; and the tarsus than the tibia; the tarsus being very short and conical, and apparently exarticulate, with a few bristles at the tip.

“*Four hind legs* rather long and slender, scaly. Tibia of the middle legs much shorter than that of the hind ones; tibiæ armed beneath with two rows of slender long spines; tibial spurs long and acute. Tarsi very long, armed with several rows of sharp spines. Claws long, curved, acute, and entire. Pseudonychia long, slender, bifid. Pulvillus moderately produced.

“ABDOMEN long and slender.” (*Westwood, l. c.*)

### **Melanargia halimede.** (Plate XI. figs. 1 & 7, vars.)

*Arge halimede*, Ménétré, Bull. de l'Acad. xvii. p. 216; Schrenck's Reisen, p. 37, pl. iii. figs. 6 ♂, 7 ♀.

*Melanargia halimede*, var. *meridionalis*, Felder, Wien. ent. Mon. vi. p. 29 (1862).

*Melanargia halimede* and var. *meridionalis*, Rom. sur Léop. iii. p. 309, pl. xvi. figs. 9 & 10 (1887).

*Melanargia halimede*, var. *lugens*, Honrath, Ent. Nachr. xiv. p. 161 (1888).

*Melanargia halimede*, Leech, Trans. Ent. Soc. Lond. 1889, p. 101, pl. 8. figs. 5, 5 a.

*Melanargia halimede*, var. *montana*, Leech, Entomologist, xxiii. p. 26 (1890).

Var. **meridionalis**, Feld. “A *M. halimede* amurensis hæc varietas circa Ningpo proveniens colore differt fusco prædominante fasciisque albis idcirco angustioribus. Ad sectionem *M. lacheseos*, Hübn., egrægia species pertinet.”

As will be seen by Felder's description quoted above, it is expressly stated that the dark colouring predominates in var. *meridionalis*. This is invariably the case with specimens from Ningpo and Kiukiang, but not with those from Amurland or Corea.

The darkest and lightest specimens, selected from over 130 examples from Kiukiang, are figured in Trans. Ent. Soc. London, 1889, pl. 8. figs. 5 & 5 a. Fig. 5 agrees well with a hand-coloured drawing of Felder's type of *meridionalis*, for which I am indebted to the kindness of Dr. Rogenhofer of Vienna.

Corean *halimede* are darker than Amurland examples; but from neither of these localities has anything dark enough for var. *meridionalis* been received; the form usually known by this name is really only an intermediate between Felder's variety and the type, and such is Romanoff's fig. 10, pl. xvi., in ‘Mémoires sur les Lépidoptères,’ vol. iii.

Herr Honrath ('Entomologische Nachrichten,' xiv. p. 161) describes a variety of *M. halimede* from Kiukiang, and there is little doubt the specimens he refers to were some of my duplicates. The form he describes as *lugens* is an intermediate between the two examples figured Tr. Ent. Soc. 1889, pl. 8.

Var. **lugens**. (Plate XI. fig. 1, ♂.) "Oberseite: Die weissen Felder an der Basis der Vorder- und Hinterflügel braunschwarz bestäubt. Die weissen Flecken sehr reducirt, schwach dunkel bestäubt und durchaus nicht reinweiss wie bei der Stammform.

"Unterseite: Färbung der Vorderflügel der der Oberseite entsprechend, die der Hinterflügel mehr mit der Stammform übereinstimmend.

"Charakteristisch sind auch noch die auffallend breit schwärzlich bestäubten Adern der Ober- und Unterseite." (Honrath, *l. c.*)

In the mountainous district of Chang-yang another form occurs, and seems so far peculiar to that region.

Var. **montana**. (Plate XI. fig. 7, ♂.) Central band very narrow, and the outer border is only faintly indicated, whilst on the secondaries the black markings are absent, excepting slight traces of a ring in the first median interspace, and a slender dentate submarginal line.

In Western China the species seems very common and typical in markings, but varying in size from 54 millim. to 76 millim.

In the 'Entomologist,' 1890, p. 26, I referred to specimens of *halimede* from Japan, whereas Corea was intended. The species has not been taken in the former country.

### **Melanargia leda.** (Plate XI. fig. 8, ♂.)

*Melanargia leda*, Leech, Entomologist, xxiv., Suppl. June 1st, 1891, p. 57.

*Arge yunnan*, Oberthür, Etud. d'Entom. xv. p. 13, pl. iii. fig. 21 (July nec June 1891).

Allied to *M. halimede*, Mén., from Amurland, with which it agrees very well in colour and markings of upper surface; but it is rather smaller in size, and on the upper surface the basal area of secondaries is clouded with black. The markings of the under surface are blackish grey, and very similar in character to those of *M. lachesis*, from Europe.

Expanse 54 millim.

The broad black inner margin of primaries and *lachesis*-like markings of the under surface will readily separate this species from any other described *Melanargia*. There is considerable variation in the width of the black transverse markings.

This species appears to be common at How-kow in Thibet, and occurs in July and August at an elevation of 10,000 feet. Mons. Oberthür (*l. c.*) states



that the species was discovered in August 1886 at Hu-chan-men, in Yunnan, by the Rev. P. Delavay.

### Genus PARARGE.

*Pararge*, Hübner, Verz. bek. Schmett. p. 59 (1816); Marshall & de Nicéville, Butt. Ind. i. p. 177 (1882).

“Differs but slightly from *Lasiommata* in having the *median* nervure of the *fore wing* but very slightly swollen at the base; the outer margin of the fore wing is scarcely sinuate, and the inner margin is longer than the outer. The sexes are identical in markings, but differ somewhat in aspect, owing to all the black markings being far more prominent in the female. The MALE has no sexual patches of raised scales or tufts of hairs on the wings.” (*Marshall & de Nicéville, l. c.*)

### *Pararge dumetorum*.

*Pararge dumetorum*, Oberthür, Etud. d'Entom. xi. p. 23, pl. iv. fig. 20 (1886).

*Pararge nemorum*, Oberthür, Etud. d'Entom. xiii. p. 42, pl. ix. fig. 103 (1890).

*Pararge dumetorum*, var. *fulvescens*, Alphéraky, Rom. sur Léop. v. p. 118 (1889).

*Male*. Dark fuliginous brown, blackish on the outer margin of all the wings; there is a whitish dash in the cell of primaries, and a longer, angulated, and interrupted one beyond the cell; submarginal band represented by seven white spots, the first three are contiguous, the fourth minute and placed on the outer edge of a fairly well-formed ocellus, the fifth is equal in size to those nearest the costa, the sixth is indistinct, and the seventh has a black centre; secondaries have two complete ocelli, one in each of the median interspaces, and there are indications of other ocelli in the interspaces above. Under surface pale olive-brown, with the markings of primaries similar to those on upper surface: the secondaries have some white basal and subbasal spots, the latter often united, forming a transverse band; the basal two thirds defined by a broad whitish band, deeply indented on its inner edge; the marginal area beyond this band is paler and traversed by a series of six complete ocelli, but the third is rather small. Fringes white, broadly chequered with the ground-colour at the extremities of the nervures.

The *female* does not differ in colour or marking from the male.

Expanse 46–52 millim.

Widely distributed in Western China, and not uncommon in some places in June and July, occurring at various altitudes between 5000 and 10,000 feet.

In the variety *nemorum*, Oberth., the typical white markings on the upper-side of primaries are absent, with the exception of a whitish spot on the costa representing the central band and the three contiguous spots of the submarginal band.

This form was taken by the Rev. P. Delavay in Yunnan.

Alphéraky describes a male of this species from Tcha-tchi-kou as var. *fulvescens*, "fasciis maculisque fulvescentibus."

### **Pararge præusta.** (Plate XI. fig. 5, ♂.)

*Pararge præusta*, Leech, Entomologist, xxiii. p. 188 (1890).

*Male.* Fuliginous brown. An angulated and interrupted fulvous band traverses the primaries from costa to outer angle; towards apex are two paler fulvous spots, with a black one below them. Secondaries have a pale submarginal line, and, in some specimens, there are indications of ocelli. Fringes whitish, chequered with black at extremities of nervules. Under surface:—Discal area of primaries reddish brown; fascia as above, but broader and paler; apical spots white, the black one below them is distinctly ringed with pale fulvous, and has a white central dot; secondaries greyish, with some marks near the base and two transverse angulated central lines reddish brown; there is a submarginal series of six ocelli, that on the costa is the largest, and is preceded by a whitish crescent, the third is the least of the series, and the sixth has two white pupils.

*Female.* The fascia is broader, there is a fulvous flush on the central area intersected by the first median nervule, and the fringes are pale fulvous, but chequered with black as in the male; the black apical spot has a white centre.

Expanse, ♂ 58 millim., ♀ 62 millim.

Closely allied to *P. episcopalis*, Oberth., but the fascia on primaries is more angulated, and fulvous instead of white. The apical spots of *episcopalis*, when present, are white and very small. On the under surface of primaries the points of difference are as well defined as above.

This species appears to be generally distributed in Western China, and occurs in the months of June, July, and August.

### **Pararge episcopalis.**

*Pararge episcopalis*, Oberthür, Ann. Soc. Ent. Fr. 1885, p. ccxxvii; Etud. d'Entom. xi. p. 22, pl. iv. fig. 24 (1886).

*Male.* Fuliginous brown. Primaries have a fairly broad, slightly curved band, composed of seven white spots, all more or less oblong in shape, the fifth and seventh are placed transversely; there is a blind ocellus ringed with paler towards apex, and two white spots between it and the costa. On the secondaries there is an indistinct pale submarginal line bordered inwardly, between the nervules, by a blackish shade. Fringe whitish, chequered with the ground-colour at ends of the veins. Under surface of primaries reddish brown, with fascia as above, but broader and less interrupted; the apical ocellus is complete, and there is a smaller one and a white spot between it and the costa; secondaries very similar to those of *P. præusta*, Leech, but the colour is a trifle darker, the central angulated lines are less distinct and placed wider apart.

*Female.* The fascia of primaries is rather broader, and the costal half is not interrupted; there is a

reddish flush on the central area intersected by the median nervules; sometimes the apical ocellus has a white pupil. Secondaries have a distinct whitish submarginal line, and in some specimens there is an ill-formed ocellus in each median interspace.

Expanse, ♂ 54-60 millim., ♀ 56-60 millim.

In one male specimen from Pu-tsu-fong there is a patch of reddish scales under the median nervure of primaries, and in another example from Ta-chien-lu the fascia of primaries is very narrow, and the apical ocellus and white spots are absent.

It occurs up to 10,000 feet, and is found throughout June and July, and at Wa-shan and Ta-chien-lu in August, and is widely distributed and not uncommon in many other parts of Western China.

### **Pararge thibetanus.**

*Satyrus thibetanus*, Oberthür, *Etud. d'Entom.* ii. p. 28, pl. ii. fig. 4 (1876).

*Pararge thibetanus*, Alphéraky, *Rom. sur Léop.* v. p. 117 (1889).

*Male.* Fuliginous brown. Primaries have three pale fulvous apical spots and a transverse band beyond the middle of the wing, composed of seven pale fulvous spots, the fourth and sixth of these are triangular, the seventh is placed above the outer angle and is intersected by the submedian nervure. On the secondaries the pattern of the under surface is faintly reproduced, and in some specimens there are three or four white points on the submarginal area, which represent the pupils of the shadowy ocelli. Fringes white, chequered with the ground-colour. Under surface of primaries blackish; there is a pale fulvous longitudinal streak on the basal portion of discoidal cell and a transverse dash about the middle, these marks are sometimes united; beyond the cell is a pale fulvous band interrupted on the median and submedian interspaces; there is a distinct ocellus towards apex, with two white spots above it and a pale fulvous one below; the median nervure and branches are fulvous to the middle of the wing, and there are some fulvous clouds under this nervure: secondaries are creamy white, radiated and spotted with black at the base; the central black band is angulated and much interrupted; the submarginal band is composed of six large black spots with white centres, and there is a series of oblong black spots, followed by a white line, on the outer margin.

*Female.* In addition to the markings of the male on the upper surface of primaries, this sex has a broad fulvous bar on the discoidal cell, and a dash of the same colour on first median nervule, and, in some specimens, at the base of second median nervule; secondaries and under surface as in the male.

Expanse, ♂ 64 millim., ♀ 54-64 millim.

In some examples of the male from Pu-tsu-fong and Ta-chien-lu, the fulvous markings on the upper surface of primaries are only represented by the apical spots, which are very small, and vestiges of the fourth and sixth spots of transverse band; on the under surface of primaries the fulvous markings are, with the exception of the clouds below median nerve, replaced by white.

Common and widely distributed in Western China. It occurs in the months of June, July, and August, and is found at various elevations up to 10,000 feet.

### **Pararge achine.**

*Papilio achine*, Scopoli, Ent. Carn. p. 156 (1763); Hübn. Eur. Schmett. i. figs. 170, 171.

*Papilio dejanira*, Linnæus, Mus. Ulr. (1764).

*Pararge achine*, Lang, Butt. Europe, p. 295, pl. lxxiii. fig. 4 (1884); Pryer, Rhop. Nihon. p. 31, pl. ix. fig. 6.

*Pararge achinoides*, Butler, Cistula Entom. ii. p. 283 (1878).

*P. achinoides*.—"Extremely close to *P. achine* of Europe, but the ocelli of the primaries of nearly equal size throughout, and the pale streak beyond the cell more strongly defined: secondaries with the ocelli larger, an additional indistinct one near anal angle; a pale streak across the median branches behind the ocelli: wings below with all the ocelli decidedly larger and white pupilled, the white streak of secondaries becoming obsolete towards the front of the disc, and therefore not enclosing the ocelli. Expanse of wings 2 inches 3 lines.

"The wings are of the brown colour common to *Lethe sicelis*." (Butler, l. c.)

Japanese specimens of *P. achine* (= *achinoides*, Butl.) do not exhibit any material difference from Amur examples of the species.

Occurs in Central and Northern Japan, and at Gensan in the Corea. Pryer says "the species is abundant at Nikko in June and July; Yesso specimens are generally larger and lighter coloured." Throughout Central Europe, Scandinavia, South Russia, the Altai, and the Amur. M. Oberthür records it from the Isle of Askold (Etud. d'Entom. v. p. 17).

*Larva*. "Pubescent green, with three darker dorsal lines, two double lateral and a stigmatal line; the head and thoracic legs yellowish; the posterior legs and the caudal points green. Feeds on *Lolium perene*, and is full-grown in May. Pl. lxxvi. fig. 6." (Lang, l. c.)

### **Pararge catena.** (Plate XI. fig. 9, ♂.)

*Pararge catena*, Leech, Entomologist, xxiii. p. 30 (1890).

*Male*. Brown suffused with fuliginous. Primaries traversed by an angulated indistinct dark line bordered externally with paler, most clearly towards costa; a submarginal series of six black spots set in ochreous rings, the first of which is very small and the last two larger than the others; marginal line pale. Secondaries with a pale angulated central band and a submarginal series of six ochreous ringed black spots, the third very small and the sixth equal in size to the fourth and fifth, but ill-defined; a pale line parallel with outer margin; fringe pale ochreous, chequered with brown at the ends of nervules. Under surface of primaries grey-brown; a pale ochreous bar, edged with brown, crosses the discoidal cell, and is preceded

by a small spot of the same colour; beyond the cell is an angulated dark line edged externally with pale ochreous; this edging forms a triangular patch at costa, and unites with a quadrate spot of the same colour on inner margin; there are six pale ochreous spots towards outer margin, all of which, with the exception of the first, have black centres with white pupils; beyond these is an interrupted short ochreous band, two pale ochreous lines enclosing a brown one parallel with outer margin. Secondaries brown, with an olive tint; some spots and an interrupted white band near the base; central band white, angulated and intersected at the angle by a short longitudinal white bar; a submarginal series of six ocelli, the first bipupillated and the third very small, the first three are distinctly bordered externally with white, and the last three less distinctly; lines parallel with outer margin whitish; fringes as above.

*Female.* Similar to the male, but the black spots are ringed with pale yellow, and there is an oblique dash of the same colour from costa to the third median nervule, from whence a pale indistinct line proceeds towards the inner margin, which, however, it does not quite reach; the white markings on the under surface are rather broader.

Expanse 55 millim.

*Pararge catena* is closely allied to *P. achine*, and possibly may be a Chinese local race of that species, but it exhibits the following points of difference:—The upper surface is more fuliginous, the fringes are purer white and more distinctly chequered with the dark ground-colour. The under surface is darker; the transverse markings are better defined on the primaries; the central band of secondaries is distinctly white, much narrower, and uninterrupted; there are always some white spots at the base, and a clear white subbasal line interrupted near costa is a conspicuous feature of these wings.

Occurs at Chang-yang in July and August, but my collectors did not meet with it in any other part of China.

### **Pararge deidamia.** (Plate XII. fig. 5, ♀.)

*Pararge deidamia*, Eversmann, Bull. Mosc. 1851, i. p. 617; Pryer, Rhop. Nihon. p. 31, pl. ix. fig. 7.

*Satyrus menetriesii*, Bremer & Gray, Schmett. Nördl. China's, p. 8 (1853); Ménétrés, Cat. Mus. Petr. pt. i. pl. vi. fig. 4 (1855).

*Pararge erebina*, Butler, Ann. & Mag. Nat. Hist. (5) xi. p. 278 (1883).

Fuliginous brown. Primaries with a subapical ocellus, pupilled with white, ringed with yellowish, and preceded by an oblique obscure yellowish streak; there is another similar streak between third and first median nervules. Secondaries have one ocellus in each median interspace, irides obscure yellowish. Under surface paler, the iris of ocellus on primaries is paler yellow, and the oblique streaks are white; secondaries have a submarginal series of six ocelli pre-

ceded by a whitish band and followed by three ochreous-grey wavy lines. Fringes white, chequered with brown at the tips of nervules.

Ménétriés's figure represents a female specimen. It has the ocellus on upper surface of primaries narrowly ringed with white, the oblique white streaks are broad, and the lower one is divided by the second median nervule; the secondaries have three subanal ocelli, and obscure pale brown central and submarginal lines. Under surface of primaries paler, with a twice interrupted broad white band beyond the middle of the wing, ocellus as above; secondaries have a series of six ocelli preceded by a broad white band and followed by three wavy pale brown lines. Fringes white, marked with brown at the extremities of the nervules.

Var. **erebina**. "Nearly allied to *P. deidamia* (*Menetriesii*, Brem.), but readily distinguished as follows:—Primaries more produced, the subapical ocellus four times as large, surrounded by a pale zone in the male and a white one in the female; below this ocellus upon the disc are two small spots placed obliquely, those of the male a little paler than the ground-colour, but those of the female white and representing the lower half of the zigzag white band in the female of *P. deidamia*; on the under surface the sexes do not differ from each other to anything like the extent that they do in *P. deidamia*; they approach most nearly to the male of that species in pattern, but differ in having a white submarginal stripe in the male and two in the female, also in the larger white-zoned ocellus on the primaries. Expanse of wings, ♂ 56 millim., ♀ 54 millim.—♂ ♀. S.E. Corea, October." (*Butler, l. c.*)

Female specimens from Oiwake, Japan (Plate XII. fig. 5), agree fairly well on the upper surface with Ménétriés's figure, but the iris of ocellus on primaries is fainter and dull ochreous, and there are only two ocelli on secondaries. On the under surface the subapical ocellus has a lobe from its upper or lower edge, sometimes both, and the iris is pale yellowish; the lower third of the white band of primaries is represented by a minute streak, and that of the secondaries is indicated by a white spot on the costa, another at end of cell, and an obscure pale line from thence to inner margin. The males from the same locality are very similar to the females on the under surface, but are almost identical with males from the Amur on the upper surface.

Examples from Chang-yang, Central China, are smaller than either Amur or Japanese specimens, and the apex and outer margin of primaries of the male are more rounded. The female has a larger ocellus, the iris is rather broad and yellowish, the oblique streaks are also yellowish but narrow.

This variable species occurs in Amurland, Corea, Northern, Central, and Western China, extending into Thibet. In Central Japan it seems to be

confined to mountain districts. It is also found in Yesso. The habits of the imago are sluggish, and its flight weak, and although widely distributed it does not appear to be common anywhere.

### Genus AMECERA.

*Amecera*, Butler, Ann. & Mag. Nat. Hist. (3) xix. p. 162 (1867).

*Lasiommata*, part., Westwood.

“Alæ anticæ margine postico minime undato nec apud apicem angulato; posticæ valde elongatæ, margine postico vix sinuato; aliter velut in *Lasiommata*; venis velut in *Lasiommata*, cella autem posticarum brevior.

“Corpus antennis magis elongatis et tenuioribus, clava pyriformi compressa; palpis articulo apicali magis elongato. Type *A. megæra*.” (*Butler, l. c.*)

### ***Amecera majuscula***, sp. n. (Plate XII. fig. 6, ♂.)

*Male*. Fuscous. Primaries with a large bipupillated subapical ocellus placed rather obliquely, iris pale fulvous, broadest on its outer edge, and bordered inwardly with paler; secondaries have three ocelli, but the irides are dull in colour and not always well defined; all the wings have a dark band on outer margin, intersected by a pale transverse line. Fringes white, marked with fuscous at the extremities of the nervules. Under surface of primaries grey, broadly suffused with pale fulvous on the outer half of the wings below ocellus; the discoidal cell is crossed by two dark bars and closed by a third, and there is a dark oblique line immediately beyond the end of the cell; a pale ochreous band on the outer margin is bordered inwardly by a sinuate black line, and intersected by a black transverse line: secondaries pale grey, traversed by two wavy dark lines; there are six submarginal ocelli, each with an inner and outer ring of brown; the sixth is compound; a pale outer marginal band intersected and bordered as on primaries.

*Female*. Similar to the male, but the iris of ocellus on primaries is paler and set in a band of the same colour; this band is intersected by the third median nervule, and its lower extremity is represented by a detached spot in the submedian interspace. Secondaries and under surface as in the male.

Expanse, ♂ 68 millim., ♀ 62–68 millim.

Allied to the Indian *A. schakra* and to *A. mæra* from Europe, but its large size separates it at once from either of these species. From *A. schakra* it is further distinguished by its large bipupillated ocellus on primaries.

This species does not appear to be common in Western China. I have received it from Ta-chien-lu, Pu-tsu-fong, Wa-ssu-kow, Chia-ting-fu, and also from How-kow in Thibet. It is found in June and July, and occurs up to an elevation of 10,000 feet.

## Genus SATYRUS.

*Satyrus*, Westwood, Gen. Diurn. Lep. p. 388 (1851).

- “BODY generally rather robust, hairy; wings large, considerably variegated, with the costal and median veins of the fore wings swollen at the base, and the apical margin somewhat scalloped.
- “HEAD rather small, thickly clothed with rather short hairs.
- “*Eyes* prominent, naked.
- “*Labial palpi* rather short, porrected obliquely, but not reaching much above the middle of the eyes, and extending forwards about half the length of the head, rather thickly clothed beneath with moderately short hairs; the middle joint with a compressed conical tuft of hairs in the middle of the hinder margin; terminal joint very short and oval.
- “*Antennæ* not near half the length of the fore wings, very slender, articulations indistinct, not annulated with white; terminated either by a short, abrupt, broad, concave club, or by a long, slender, fusiform club, with its base gradually formed.
- “THORAX oval, clothed, especially behind, with long soft hairs; wings large.
- “*Fore wings* with the costal and median veins greatly swollen at the base. Costal margin well arched, apical angle rounded, apical margin more than two thirds the length of the costal. Inner margin not, or scarcely, so long as the apical one, nearly straight. Veins arranged as in *Lasiommata*; the third and fourth branches of the postcostal vein being, however, more approximate to each other, leaving a greater space between the extremity of the discoidal cell and the third, and between the fourth and the tip of the wing. The upper discocellular vein is extremely short and transverse, and the middle and lower ones nearly continuous and oblique; the latter united with the third branch of the median vein at about the same distance from its origin as exists between the first and second branches. The discoidal cell extends to the middle of the wing.
- “*Hind wings* broadly ovate, more or less scalloped along the outer margin. The anal margin either entire, or slightly incised near its extremity. Veins arranged as in *Lasiommata*, except that the upper discocellular vein is longer, and the lower discocellular is united to the third branch of the median vein at a rather shorter distance from its origin than exists between the first and second branches of the median vein.
- “*Fore legs* of comparatively moderate length, and distinctly visible in both sexes; those of the males being much more densely clothed with hair, and those of the female rather larger. Tarsus simple in the males, but articulated in the females; not armed, however, with minute spines at the tips of the joints.
- “*Four hind legs* rather short, scaly. Femora almost entirely destitute of hairs beneath. Tibiæ armed with several rows of spines, set rather widely apart, at the sides beneath; tibial spurs very acute, and rather long. Tarsi armed beneath and at the sides with several rows of short spines; tips of the joints with longer spines. Ungues entire, long, very acute, and curved. Paronychia very slender.
- “ABDOMEN moderately elongate-ovate.” (*Westwood, l. c.*)



**Satyrus autonoe.** (Plate XI. fig. 6, ♂ var.)

*Papilio autonoe*, Esper, Schmett. i. 2, pl. 86. figs. 1-3 (1783).

*Satyrus autonoe*, Godart, Enc. Méth. ix. p. 518 (1823).

Var. **celæno**, var. nov. (Plate XI. fig. 6, ♂.) Subapical ocellus of primaries very small, and that between the first and second median nervules is only represented by a minute blackish spot; the outer edge of the dark basal half of the wings is only once angulated on the primaries, and very obtusely angled on the secondaries. On the under surface of primaries the same differences obtain; but the secondaries are much darker, the white central band rather wider, venation is also white.

Expanse 56 millim.

One male specimen taken in July, at an elevation of 10,000 feet, at How-kow in Thibet.

M. Alphéraky records a form of *Satyrus autonoe* from North-western China, which he describes under the varietal name of *extrema*\*, as follows:—"Multo major, fasciis albis (infumatis) distinctissimus, orbiculis nigris cæruleo-pupillatis multo majoribus. ♂ ♂ = 56-56½ millim." I have received specimens of this form from M. Grum. Grshimailo, taken by himself in the Dshachar Mountains, Thibet; also examples of var. *sibirica*, Staudinger (dilutior, fasciis albicantibus), from the Thian-chan.

**Satyrus dryas.** (Plate XIII. figs. 1, 3, 6, vars.)

*Papilio dryas*, Scopoli, Ent. Carn. p. 153 (1763).

*Papilio phædra*, Linnæus, Mus. Utr. p. 280 (1764).

*Satyrus bipunctatus*, Motschulsky, Etudes Ent. ix. p. 29 (1860).

*Satyrus dryas*, var. *sibirica*, Staudinger, Cat. Lep. p. 29 (1871).

*Satyrus dryas*, var. *paupera*, Alphéraky, Rom. sur Lép. v. p. 117 (1889).

*Satyrus dryas*, Pryer, Rhopalocera Nihonica, p. 31, pl. ix. fig. 5.

*Male*. Dark brown. Primaries have two black spots with pale blue centres; secondaries have a smaller blue-centred black spot between the first and second median nervules, and the outer margin is slightly dentate. Under surface paler than above; the spots of primaries are ringed with yellowish: secondaries have the basal two thirds limited by an obtusely angulate brown line, which is broadly bordered outwardly with pale greyish; there is a short transverse pale greyish streak from about the middle of the costa, and a blackish submarginal band.

*Female*. Paler and with larger ocellated spots.

Var. **bipunctatus**. "Figura *S. phædri* sed paulo major, alis posticis subtus: fascia undulata, subalba, punctis nigris postice duobus." (*Motschulsky, l. c.*)

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\* Rom. sur Lep. v. p. 116 (1889).

Var. **paupera**. "Var. minor, orbiculis (cyaneo-pupillatis) anticarum supra subtusque fulvescente cinctis; subtus alis magis grisescentibus, pallidioribus, vix signatis. ♂ = 42 mm." (*Alphéraky, l. c.*)

Var. **sibirica**. "Subtus ♂ et ♀ omnino unicolor." (*Staudinger, l. c.*)

Var. **astræa**, var. nov. (Plate XIII. fig. 6.) *Male*. Brown, with a golden sheen; the ocelli on primaries are about equal in size, and those of secondaries are complete and four in number; under surface greyish brown; discal area of primaries tinged with ochreous; three whitish patches on the central area of secondaries indicate the transverse band of the type; there is a small black spot near anal angle, and the submarginal line is sharply dentate, blackish.

*Female*. Similar in colour to the male, but this sex has only three ocelli on upper surface of the secondaries, and the band on under surface is well defined, and often broader than in the type.

Specimens of *S. dryas* from Western China often have three, and sometimes four, ocelli on the secondaries. On the under surface the secondaries are often unicolorous and without black spots, but frequently they are far more variegated than in the type; the limiting blackish line of basal two thirds is often acutely angulated, and the interior greyish streak from costa much broader; the submarginal band is replaced by a black dentated line. On Plate XIII. two of the varieties are figured: figure 1 is the How-kow form, which is similar to, but not identical with, var. *paupera*, Alph.; figure 6 represents the form from Ta-chien-lu described by me as var. *astræa*.

In Central and Eastern China, Japan, and the Corea, *S. dryas* is represented by a form identical with Amur specimens. Plate XIII. fig. 3 is a curious aberration of the female from Hakodate, Japan. M. Alphéraky informs me that he has taken in the region to the north of the Caucasus specimens of *S. dryas* which are not separable from var. *sibirica*, and that examples of the species from Kuldja, taken by himself, cannot be distinguished from either Siberian or Caucasian specimens.

### Genus AULOCERA.

*Aulocera*, Butler, Ent. Mo. Mag. iv. p. 121 (1867).

"Alæ magnæ, nigræ albo-fasciata; ciliis latis albis nigro-variegatis; venis anticarum velut in *Hipparchia* ad basin autem minus tumidis; posticæ venis velut in *Hipparchia*, cella autem discoidali magis integra; costa magis convexa; corpus lanare; palpis velut in *Hipparchia*.

"Antennis, clava gradatim formata, subtus stria media longitudinali leviter excavata.

"Closely allied to *Hipparchia*, from which it chiefly differs in the form of

the antennæ, the character of the markings, and the longer fringe to the wings." (*Butler, l. c.*)

### **Aulocera padma.**

*Satyris padma*, Kollar, Hügel's Kaschmir, iv. pt. 2, p. 445, pl. xv. figs. 1, 2 (1848), ♀.

*Satyris avatara*, Moore, Cat. Lep. E. I. C. i. p. 229 (1857), ♂.

*Aulocera padma*, Marshall & de Nicéville, Butt. Ind. i. p. 196 (1882).

*Male*. Sooty black; the transverse band of primaries is composed of seven distinct white spots: there is a small linear spot on the costa, and in some specimens there is an obscure whitish spot between it and the third spot of the transverse band. On the secondaries the white transverse band is intersected by the nervules and tapers slightly to the abdominal margin, where it terminates in a detached oval spot; the inner edge of this band is slightly undulated, and the outer edge is gently curved, and there are short projections from it along the median nervules. The under surface of primaries is fuliginous brown mottled with black, and striated with white along the costa and in the discoidal cell; the transverse white band is wider than above, and the spots of which it is composed are closer together; there is a white oblique dash from the third spot to the costa, and a white-pupilled black spot lies between the dash and second spot of the band: the secondaries are black mottled with brownish and white, finely on the basal half of the wing, and more coarsely on the outer area; the band is rather narrower than above, and its outer edge less clearly defined.

*Female*. Larger and paler in colour; the linear spot on costa of primaries is double, and there are two distinct white spots between it and the third spot of band; the outer edge of band on secondaries is not so sharply defined; on the under surface the band of primaries is much broader, and all the wings are more striated and mottled with white.

Expanse, ♂ 90 millim., ♀ 98–104 millim.

Compared with Indian examples of *A. padma* the Chinese specimens are larger and the under surface of all the wings more variegated.

Locally common in Western China; occurring from June to August, and found at elevations ranging from 6000 to 7000 feet.

### **Aulocera loha.**

*Aulocera loha*, Doherty, Journ. Asiat. Soc. Beng. 1886, p. 118.

*Satyris loha*, Elwes, Trans. Ent. Soc. Lond. 1888, p. 323, pl. ix. fig. 6.

In distinguishing *A. loha* from *A. padma* the most certain characters are the obscurity of the sexual mark of the male—the narrower band on secondaries, which is of nearly uniform width throughout, has the edges clearly defined and is pale ochreous beneath—and the outward elongation of the fourth and fifth spots of the band. The presence or absence of the subcostal white spot on the upper surface of primaries is not always a trustworthy character. One

male of *A. loha* and two of *A. padma*, from Huang-mu-chang, agree in having this subcostal spot. In the example of *A. loha* the spot is not so well defined as it usually is in this species, and one of the *A. padma* corresponds exactly with it; the other specimen of *A. padma* has the spot almost as well developed as in typical *A. loha*.

These two species may be separated at a glance by the striation of the cell on the under surface of primaries, which in Chinese specimens of *A. padma* is coarse and fills the entire cell in both sexes, whereas in *A. loha* the striation is much finer and in some of the males altogether absent.

Generally common and widely distributed throughout Western China.

In his paper on the "Lepidoptera of Sikkim," Mr. Elwes (*l. c.*), referring to this species, says:—"I took it only on the Singalelah Range, which bounds Sikkim on the west between Tonglo and Phallut, at elevations of from 10,000 to 12,500 feet, in July; but it was most abundant on the grassy ridge beyond Sundukpho above the pine-forest, where it flies strongly above the trees, resting on their trunks, and settling on flower-heads in the open parts and on the edge of the forest."

### ***Aulocera merlina.***

*Satyrus merlina*, Oberthür, Etud. d'Entom. xiii. p. 40, pl. x. fig. 105 (1890).

*Male.* Black, tinged with bronzy brown in certain lights. Primaries have a faint pale streak in the discoidal cell, and are traversed by a broad white macular band; the second, fourth, and fifth spots of this band are each transversely divided by the interposition of a roundish spot, which is rather darker than the ground in colour. Secondaries have a broad white central band intersected by the nervules, its inner edge angulated. Fringes white, broadly chequered with the ground-colour at the extremities of the nervules. Under surface of primaries shining fuscous grey-brown; a broad white streak on the cell; macular band as above, and there are some pale greyish markings along the apical portions of the costal and outer margins; secondaries blackish, with the central band rather narrower than above, and some pale greyish markings on the outer third of the wing, and also along the abdominal margin.

*Female.* Similar to the male, but the streak in the cell of primaries above is more clearly defined, and the transverse bands on all the wings are broader. On the under surface the markings are also similar, but the basal area of secondaries is also marked with greyish.

Expanse, ♂ 75 millim., ♀ 75-86 millim.

Widely distributed and not uncommon in Western China. It is on the wing from June to August.

**Aulocera magica.** (Plate XIII. fig. 4, ♂ var.)

*Satyrus magica*, Oberthür, Etud. d'Entom. xi. p. 24, pl. iv. fig. 21 (1886).

Similar to *A. merlina*, Oberthür, but the spots forming the band of primaries are smaller, the sixth spot is completely divided longitudinally, and there are some indistinct pale streaks between it and the base of the wing; the band on secondaries is narrower and broken up into separate spots; there is a white or whitish streak in the discoidal cell of all the wings, but this is most conspicuous on the secondaries. On the under surface this species is at once separated from *A. merlina* by the distinct white discal streaks on all the wings.

Expanse, ♂ 75 millim., ♀ 80 millim.

Apparently a very scarce species in Western China, as I have received but four specimens. One of these is a female example, which is larger than the male, but does not differ in other respects; another is a variety of the male, and of this I append a brief description:—

Var. *lativitta*, var. nov. (Plate XIII. fig. 4.) The spots and streaks of the primaries are placed as in the type, but they are broader and distinctly white, and, in addition, there is a broad white streak along the inner margin extending from the base almost to the inner angle; the basal two thirds of secondaries is white, intersected by the black venation, with a broad black bar between the costa and cell.—How-kow, July, 10,000 feet.

Occurs at Ta-chien-lu, Wa-shan, and Chia-ting-fu in June and July; also at How-kow in Thibet.

**Aulocera sybillina.**

*Satyrus sybillina*, Oberthür, Etud. d'Entom. xiii. p. 40, pl. x. fig. 106 (1890).

Closely allied to *A. brahminus*, Blanchard, and agrees with it in size, but in the male the white spots forming the transverse band of primaries are smaller, the sixth is always divided longitudinally, and the seventh is indistinct or altogether absent: the band of secondaries is rather curved and of uniform width from the middle to abdominal margin; the upper portion of this band is slightly angulated towards costa and divided into spots. In the female the spots of the band on primaries are equal in size to those of the same sex of *A. brahminus*, but the sixth is divided as in the male: the band of secondaries is rather wider than in the male. On the under surface the primaries are fuliginous brown, with a white patch in the cell and some white mottling on the discal area; the secondaries are black, with a subbasal patch of white on the costa and some white mottling on the outer area.

Locally common in Western China during June and July.

## Genus CENEIS.

*Ceneis*, Hübner, Verz. bek. Schmett. p. 58 (1816).

*Chionobas*, Westwood, Gen. Diurn. Lep. p. 381 (1851).

“BODY very hairy; wings but moderately clothed with scales of a dull brownish-buff or dirty fulvous colour; the hind wings beneath much freckled.

“HEAD very small and very hairy.

“Eyes prominent, naked.

“Antennæ short, slender, gradually thickened from the middle into a long but not thick club, obtuse at the tip, concave, finely carinated beneath.

“Labial palpi densely hairy in front, porrected obliquely, scarcely reaching to the level of the top of the eyes, but porrected to the length of the head; terminal joint small, slender-oval, hairy.

“THORAX very hairy.

“Fore wings elongate-triangular. The fore margin scarcely arched; the apex rounded. Apical margin convex; entire, about two thirds of the length of the costal. Inner margin straight, not quite so long as the apical. Veins arranged as in *Erebia*, except that, in consequence of the greater length and narrowness of the wing, the discoidal cell is narrowed and elongated to some distance beyond the middle; the middle and outer discocellular veins (the upper one being obsolete) forming a nearly continuous, oblique, slightly curved line.

“Hind wings also elongated, so that they extend considerably beyond the inner angle of the fore wings. The costal margin nearly straight. The outer margin rounded, entire, or but slightly scalloped. Anal margin entire. Veins arranged as in *Erebia*, except that the discoidal cell is elongated and narrow, extending considerably beyond the middle of the wing. The upper discocellular vein is also much elongated, and the lower one as long as the space between the base of the third branch of the median vein and the point of its junction with the outer discocellular.

“Fore legs of the male very small and slender, densely clothed to the tip with long loose hairs. The femur about as long as the tibia, and the tarsus as the tibia.

“Four hind legs short. Femur rather thick, very hairy beneath. Tibia clothed all over with long loose hairs; tibial spurs long and acute. Tarsi armed beneath and at the sides with rows of spines. Ungues curved, long, simple, and very acute. Paronychia and pulvillus small.

“ABDOMEN small, slender, hairy.” (*Westwood, l. c.*)

This genus is distinguished from other genera of Satyrinæ “partly by the more elongate form of the wings, the shorter inner margin of the anterior, which occasions a deeper incision between their posterior angle and the outer angle of the hind wings, partly by the wings being less densely clothed with scales than ordinary, and partly by the pale, livid, or obscure colours of the wings, and the hind ones marked with paler veins beneath.”

**Æneis pumilus.** (Plate XI. fig. 2, var.)

*Chionobas pumilus*, Felder, Reise Nov., Lep. iii. p. 490, pl. 69. figs. 6, 7 (1867); Elwes, Proc. Zool. Soc. Lond. 1882, p. 404, pl. xxv. fig. 3; Marshall & de Nicéville, Butt. Ind. i. p. 238, pl. xv. fig. 37, ♂ type (1882).

*Æneis?* (*Satyrus?*) *palaearcticus*, Staudinger, Stett. ent. Zeit. 1889, p. 20.

*Æneis pumilus*, var. *lama*, Alphéraky, Rom. sur Lép. v. p. 80 (1889).

The type of *Æ. pumilus*, which occurs in Ladak and South-western Thibet, is much smaller than any other described form of the species. In colour it is light brown, and the transverse macular bands are slightly paler. I have lately received a long series of this form from my collectors in the above-named localities.

The Sikkim specimens referred to by Mr. Elwes (*l. c.*) are larger, the ground-colour is darker, the transverse bands more pronounced, and the under surface of secondaries blacker.

The form described by Dr. Staudinger as *palaearcticus* (= *Æ. pumilus*, var. *lama*, Alph.) only differs from the Sikkim form in the narrower macular band of all the wings, the paler ground-colour, and whiter neuration of under surface of secondaries.

The form of *Æ. pumilus* from Western China and How-kow, Thibet, does not agree with either of the varieties referred to above, and I therefore describe it as:—

Var. **iole**, var. nov. (Plate XI. fig. 2, ♂.) Agrees with var. *palaearcticus*, Staud., in some respects, but larger, and fuliginous brown in colour. The primaries are traversed by a series of six small pale ochreous spots, and from the third of these three others form an oblique band to the costa; secondaries have a narrow pale ochreous macular central band. Fringes whitish, distinctly chequered with the ground-colour at the extremities of the nervules. Under surface of primaries grey-brown, with the spots whiter and rather larger than above; the secondaries have the basal two thirds fuliginous, limited by a darker angulated line, which is bordered outwards by a white band; the outer third is grey-brown, traversed by a narrow blackish sinuate submarginal band; there are some whitish marks towards the base, and the venation is sometimes pale, but not broadly whitish as in *palaearcticus*. Female is rather paler, but agrees with the male in marking.

Expanse 56 millim.

Occurs sparingly at Huang-mu-chang, Wa-ssu-kow, Omei-shan in Western China, and at How-kow in Thibet. It is found in July at elevations ranging from 3500 feet to 10,000 feet.

M. Grum-Grshimailo has sent me specimens of *Æ. pumilus* from Amdo.

The males are identical with the same sex of the form just described, but the females are paler, and approach in colour that of the type.

The superficial resemblance of this form of *Æ. pumilus* to small *Aulocera brahminus* is very striking. The colour is rather browner, but, although they are less in size, the spots forming the transverse band of primaries are almost precisely similar in number and position. This resemblance to *A. brahminus* is also found in Sikkim specimens, and Marshall and de Nicéville refer to it in their remarks on *Æ. pumilus*.

### **Æneis mongolica.**

*Chionobas mongolica*, Oberthür, Etud. d'Entom. ii. p. 31, pl. iv. fig. 6 (1876).

“Le *Ch. mongolica* est de la taille de *Ch. tarpeja*. Les ailes du mâle, en dessus, sont d'une couleur fauve, semblable à celle de *tarpeja*. Les nervures sont brunes et se détachent distinctement du fond en un petit trait linéaire. Une bordure brune unie longe le bord extérieur des ailes. Deux points noirs, dont l'un quelquefois pupillé de blanc, sont placés à l'aile supérieure comme dans les *Ch. aello* et *norna*. A l'aile inférieure, une série de petits points, au nombre de trois, quatre ou cinq, est rangée parallèlement à la bordure, un peu au-delà de la cellule discoïdale.

“La femelle diffère du mâle par sa couleur moins rembrunie et ses points noirs plus accentués.

“En dessous, les ailes supérieures sont d'un fauve très pâle; les deux points noirs du dessus sont reproduits; la côte, l'intérieur de la cellule et le bord extérieur des ailes sont mouchetés de petits traits serrés et de couleur brune. Les ailes inférieures, à fond jaunâtre, sont mouchetées dans leur entier des petits traits brunâtres; elles sont traversées par une grande tache de forme irrégulière, présentant une saillie vers le bord extérieur, et sont plus foncées sur leur contour que dans leur milieu.

“La frange, les pattes et les antennes sont jaunâtres.” (*Oberthür, l. c.*)

This species was discovered by Mons. l'Abbé A. David in Eastern Mongolia. It flies in summer on the mountains at an altitude of 500 metres. Mons. Oberthür observes that *Æ. mongolica* is allied to *Æ. uhleri*, Edw., from the Rocky Mountains, *Æ. nanna*, Ménétrés, from Siberia, and *Æ. sculda*, Eversmann, from the same country. The range of this species does not appear to extend into Western China, but seems to be replaced there by a near ally, *Æ. buddha*, Gr.-Gr.

### **Æneis buddha.**

*Æneis buddha*, Grum-Grshimailo, Horæ Ent. Ross. 1891, p. 458.

“Alis supra in utroque sexu fulvis aut flavido-fulvis plus minusve murino mixtis et ad marginem externum obscurioribus; limbo lato, maculis ocularibus anticis tribus, posticis duabus (sæpe



etiam singula aut nulla) notato, fulvo, ad marginem externum tenuiter fusco, ad discum minus argute marginato. Fimbria lutescenti, in nervis fusco interrupta.

“Subtus anticis pallidioribus flavido-fulvescentibus, basi apiceque murino mixtis; striola vermiformi trans cellulam mediam currente, lunula venæ transversæ marginibusque limbi, lætius tincti, nigro-fuscis, nervis in apice albido atomatis; alis posticis sordide griseis, basin versus fusco atomatis, area externa murino-fuscescenti, obscurius a disco marginata, limbo medio lato, dentato, ad margines obscuriore, griseo-fuscescenti, nervis late albido atomatis. Expanse ♂ ♀ 22–24 millim.

“In alpibus Sinin-Schan collecta.” (*Gr. Gr. l. c.*)

My collectors met with this species at How-kow, Thibet, where it flies in July at an elevation of 10,000 feet. The form agrees with specimens from Amdo sent to me by M. Grum-Grshimailo.

### **Ceneis walkyria.**

*Ceneis walkyria*, Fixsen, Rom. sur Lép. iii. p. 310, pl. xiv. fig. 4 (1887).

“Corpore ac capite testaceis, oculis fulvis palpis nigrescente-pilosis; antennis luteis in apice albo-striatis; thorace abdomineque globosis livide pilosis. Alis supra in femina testaceis vel murinis: anticarum fascia nigricante obductis, quoque ex margine anteriore ad cellulæ extremitatem ramum dissecante, illam ocludente et per nervum quartum ad marginem exteriorem progrediente, hoc modo parvam maculam apicalem (interdum pupillatam) a macula magna nigra albo-pupillata, ad quam interdum macula parva nigra accedit, separante; posticarum quoque nigro marginatis, maculis minoribus nigris albo-pupillatis intercostalibus. Subtus: pallidioribus, fumatis, cinereo-marginatis basi et disco fascia lata irrorata cervina nervis albis dissecta, nec non in area limbali maculis parvis quatuor nigrescentibus intercostalibus ut supra.” (*Fixsen, l. c.*)

Dr. Fixsen states that this species occurs in the neighbourhood of Pung-tung, Corea, at an elevation of 3000 feet in May and June.

### Genus EPINEPHELE.

*Epinephele*, Hübner, Verz. bek. Schmett. p. 59 (1816); Marshall & de Nicéville, Butt. Ind. i. p. 201 (1882); Lang, Butt. Europe, p. 295 (1884).

“Antennæ tolerably long, club not very distinct. Palpi longer than the head, the articulations hairy. Eyes not hairy. Front legs short and very slender, not hairy. The femora of the rest smooth beneath in the female. Wings rounded; hind wings moderately dentate, slightly incised on their inner margin near the anal angle. The costal and median nervures are equally dilated at their origin; the submedian without any dilatation. The fore wings of the males have generally a patch of dense scales beneath the median nervure. Prevailing colour of wings dark brown, marked with fulvous; there is at least one ocellated spot near the apex of the fore wings.” (*Lang, l. c.*)

“The genus *Epinephele* occupies almost the same range as *Hipparchia*

[*Satyrus*], and is about equally represented here. . . . . The genus comprises two well-marked groups, first those in which the males have a conspicuous brand on the fore wing, composed of silky densely packed scales, and extending along the median nervure below the cell, as in many species of true *Hipparchia* [*Satyrus*]; and second, those in which the males have no trace of a brand on the fore wing; this latter group contains the smallest species of the genus. In the first group the shape of the anal angle of the hind wing, and in the second group the absence of the sexual brand in the male distinguish them from *Hipparchia*, but the two genera are closely allied. The antennæ in all the Indian species of *Epinephele* have a gradually-formed club, as also have some *Hipparchia*. None of the species of *Epinephele* have a complete series of ocelli on the underside of the hind wing, and in many of them that wing is altogether devoid of ocelli on both sides." (*Marshall & de Nicéville, l. c.*)

**Epinephele maculosa.** (Plate XII. fig. 3, ♂.)

*Satyrus maculosa*, Leech, Entomologist, xxiii. p. 30 (1890).

*Male.* Dark greyish brown. Primaries with three large black yellowish-ringed spots towards outer margin; the two lower ones are contiguous. Secondaries have two similar spots above anal angle; fringes pale grey, tipped with darker. Under surface pale grey; basal two thirds and outer margin of primaries thickly sprinkled with brownish; a dark brown line traverses the wing before the three large ocelli; three narrow black lines on outer margin enclose two whitish ones. Secondaries reticulated with brownish on basal two thirds; ocelli five in number, the two nearest the costa contiguous, the other three lie towards anal angle, the fifth least in size; a dark wavy submarginal line and two parallel with outer margin enclosing a whitish one; fringes pale grey. Expanse 36 millim.

*Female.* Rather darker, the black spots are larger and the yellow rings broader and clearer.

Allied to *Satyrus arvensis*, Oberth., but differs from that species in having five ocelli of equal size, and further in the absence of white pupils.

This appears to be a local and probably rare species, as I have received but very few specimens, and these only from Chang-yang, where they were taken in July.

**Epinephele arvensis.** (Plate XII. fig. 4, ♀.)

*Satyrus arvensis*, Oberthür, Etud. d'Entom. ii. p. 30, pl. iv. fig. 2 (1876).

*Epinephele arvensis*, Alphéraky, Rom. sur Léop. v. p. 116 (1889).

*Male.* Rather shining greyish brown, the basal half of all the wings darker; the male brand on primaries is in the shape of a broad, slightly oblique fascia, extending from the middle of

inner margin to the third median nervule; two large ocelli towards apex, one or both often without pupils; the outer margin darker. Secondaries have two ocelli towards anal angle. Under surface is greyish, with the basal half darker: primaries have a double ocellus near costa, and beyond this is a whitish band limited outwardly by a brown line, and inwardly by the darker basal area; in the lower portion of this band there are three ocelli; all the ocelli have broad yellow irides, and are set in brown rings; there is a narrow whitish band on outer margin, edged on each side by a brown line. Fringes pale grey, chequered with darker at the extremities of the nervules.

*Female*. Paler, the ocelli larger and the yellow irides of those on primaries broader; there is often a third ocellus towards costa of secondaries.

Expanse, ♂ 50 millim., ♀ 56 millim.

Var. **campana**, var. nov. Darker than the type, and the ocelli are much smaller. Under surface is also darker, except the basal third of secondaries, which is paler than in typical specimens of *arvensis*; there is a short whitish patch before the costal ocellus of secondaries, and the pale fascia beyond is broader and more clearly defined. The whitish fringes are not marked with darker in the male, and only very faintly in the female.

The typical form of *S. arvensis* occurs at Moupin, Huang-mu-chang, Wa-shan, and Chia-kou-ho in July and August; and the var. *campana* at Ta-chien-lu in May and June, and at Pu-tsu-fong in June and July.

### **Epinephele bieti.**

*Epinephele bieti*, Oberthür, Etud. d'Entom. ix. p. 17, pl. ii. fig. 2 (1884); Alphéraky, Rom. sur Léop. v. p. 115 (1889).

Differs from *E. hyperanthus* in the blacker colour of upper surface. On the under surface the colour is paler than in typical *hyperanthus*, the ocelli are uniformly smaller, and in some specimens obsolete, as in var. *arete* of that species. There is never more than one costal ocellus on the secondaries; the irides of the ocelli are always faint; there is no indication of any submarginal lines.

This is probably only a local race of *E. hyperanthus*.

Occurs commonly in Western China in June and July.

### **Epinephele hyperanthus.**

*Papilio hyperantus*, Linn. Syst. Nat. x. p. 471 (1758).

*Epinephele hyperanthus*, Lang, Butt. Eur. p. 302, pl. lxxiv. fig. 4 (1884).

*Satyrus ocellatus*, Butl. Ann. & Mag. Nat. Hist. (5) ix. p. 14 (1882).

“Expands from 1.60 to 1.75 in. All the wings dark brown, in the male nearly black, in the female paler; there is a submarginal row of black spots on all the wings centred with white, and surrounded by yellowish rings; their number is variable, but there is generally from one to three on the fore wings, and two or three on the hind wings. Underside lighter brown; the fore wings have three black submarginal spots in yellow rings, two of them having white

centres. Hind wings with five spots, yellow-ringed and white-centred; marginal fringes whitish." (*Lang, l. c.*)

There are two examples of this species from Posiette Bay, N.E. Corea, in the National Museum, South Kensington. One of these is a very large specimen of the typical form, but the other has enormous ocelli on all the wings. The last named is the type of Mr. Butler's *Satyrus ocellatus*, which I consider to be only an aberrant form of *hyperanthus*, and of which I append the original description:—

Var. **ocellatus**. "*Female* nearly allied to *S. hyperanthus*, but with all the ocelli of about three times the size; those on the under surface with confluent irides and oval in form. Expanse of wings 2 inches." (*Butler, l. c.*)

A common species throughout Central and Northern Europe, Asia Minor, and the Altai.

Mr. Elwes (*P. Z. S.* 1881, p. 907) says that *E. hyperanthus* is "common in Amurland, where the type is larger, with larger spots than in Europe." I have three specimens from the Amur in my collection of var. *arete*, Müll., the ocelli being represented on the under surface by white dots. M. Oberthür (*Etud. d'Ent.* v. p. 17) observes that specimens from the Isle of Askold agree with those from France.

This species has been recorded from Japan, but I believe erroneously.

Dr. Lang (*l. c.*) describes the larva as reddish or greenish grey, with a darker dorsal line and two yellowish lines on the sides; it feeds on grasses (*Poa annua*) in May and June. The early stages of this species are described and figured by the late Mr. Buckler in 'Larvæ of British Butterflies,' p. 170, pl. v.

### Genus PALÆONYMPHA.

*Palæonympha*, Butler, *Trans. Ent. Soc. Lond.* 1871, p. 401.

"Affinissimum *Euptychia* (sect. *Neonympha*), differt alis dense pilosis; anticis striga lata, opaca, masculina, obliqua; angulo antico cellulæ discoidalis haud porrecto; palpis articulo ultimo longiore.

"Nearly allied to *Euptychia*, which it much resembles in markings, but with the oblique male streak (not present in any known *Euptychia*, but represented in *E. vesta* by a scalloped embossed line); the anterior angle of the discoidal cell obliquely cut off, and therefore not projecting as in *Euptychia*; the palpi with the last joint longer, the wings clothed above with long hairs; it differs from *Paramecera* (Mexico), with which it agrees in the

last-mentioned character, and in the oblique male streak, in the different form of the front wing-cell, the shape and marking of the wings, and the length of the palpi." (*Butler, l. c.*)

**Palæonympha opalina.** (Plate II. fig. 8, ♂.)

*Palæonympha opalina*, Butler, Trans. Ent. Soc. Lond. 1871, p. 401; Lep. Exot. p. 86, pl. xxxiii. fig. 3 (1874); Leech, Trans. Ent. Soc. Lond. 1889, p. 102.

"Alæ supra fuscae, anticæ oculo uno apicali albo-pupillato lineisque duabus marginalibus, nigris; posticæ ocellis quatuor nigris; primo apicali indistincto, secundo parvo inconspicuo, tertio magno, distincto, bipupillato, quarto anali parvo, inconspicuo: alæ subtus cineræ, striis duabus mediis æquidistantibus, nebula maculari ocellos ferente lineisque duabus submarginalibus, olivaceis; linea marginali tenuissima, nigra; anticæ ocellis tribus primo apicali nigro, argenteo-bipupillato, flavo late cincto, aliis ovalibus geminatis argenteis; posticæ stria externa apud costam profunde sinuata; ocellis quinque, primo, quarto et quinto nigris argenteo-pupillatis flavo-cinctis, aliis ovalibus argenteis geminatis olivaceo-cinctis. Exp. alar. unc. 2, lin. 2." (*Butler, Trans. Ent. Soc.*)

In the majority of specimens there is a well-defined sexual brand on the primaries of the male, but in others this is very indistinct, whilst in a few, equally fine in condition, there is no trace of the brand. This is one of many similar instances occurring among Chinese Lepidoptera, which tend to show the unreliable nature of secondary sexual characters when used solely as a basis for specific or generic subdivision.

The female is rounder in the wing, the basal two thirds of all the wings are of the male colour, limited on the primaries by a dark straight band, and on the secondaries by an angulated band as in the male, the outer third of all the wings conspicuously paler.

Occurs throughout China from Ningpo to Moupin.

Genus YPTHIMA.

*Ypthima*, Hübner, Verz. bek. Schmett. p. 63 (1816); Westwood, Gen. Diurn. Lep. p. 394 (1851).

"BODY small; wings rather large, entire, uniformly and plainly coloured; the fore ones generally with a large eyelet near the extremity.

"HEAD small, clothed with long hairs in front.

"Eyes prominent, naked.

"Antennæ not half the length of the fore wings, very slender, ringed with white; terminated by a very slender club, gradually formed, with the joints short, and finely carinated beneath on the inner side.

"Labial palpi rather long, slender, acute at the tip, porrected obliquely, straight, compressed;

the tip elevated to the level of the top of the eyes, and extending forward further than the length of the head, clothed beneath with long, straight, divergent, slender, bristly hairs; the terminal joint being but slightly hairy.

“**THORAX** small, clothed in front with woolly hairs.

“*Fore wings* large, elongated, triangularly-ovate. Costal margin well arched; apical angle rounded. Apical margin entire, convex, about two thirds of the length of the costal margin. Inner margin nearly straight, three fourths of the length of the costal one. Costal vein strongly swollen at the base. Postcostal vein with its first branch arising just before the anterior extremity of the discoidal cell; the second, third, and fourth branches arising at equal distances apart; the second at a considerable distance beyond the cell. Upper discocellular vein nearly obsolete, arising at about half the length of the wing; middle discocellular curved towards the base of the wing; lower discocellular much longer, nearly continuous with the middle one, and united to the third branch of the median vein at a short distance beyond its origin; this latter vein is moderately swollen at its base, the submedian vein being simple.

“*Hind wings* triangularly-ovate. Costal margin rounded, as well as the outer margin, which is entire. Inner margin slightly emarginate towards the extremity. Costal vein extending to about two thirds of the length of the costa. Postcostal vein arising just opposite to the precostal one; its branch arising at a considerable distance from the base. The upper discocellular vein arising at a short distance from the origin of the branch, oblique, slightly curved; outer discocellular longer, also oblique, and very slightly curved; uniting with the third branch of the median vein at a little distance beyond its base.

“*Fore legs* of the male extremely minute, hirsute, concealed among the hairs of the breast. Coxa long; remainder forming a very small oval articulated mass, much shorter than the coxa. *Fore legs* of the female small, but quite distinct, several times longer than those of the male, scaly, destitute of long hairs. The tibia shorter than the femur. Tarsus about equal in length to the tibia, rather widened to the tip, articulated; the tips of the joints beneath furnished with short spines. Claws wanting.

“*Four hind legs* scaly, moderately elongate and slender. The femur moderately clothed beneath with hairs. Tibiæ scaly, scarcely spined beneath; tibial spurs long. Tarsi with longer spines on the sides beneath. Ungues strong, curved, entire. Paronychia minute.

“**ABDOMEN** elongated, slender, rather thickened at the tip in the males.” (*Westwood, l. c.*)

### ***Ypthima conjuncta.*** (Plate X. figs. 3 ♂, 4 ♀.)

*Ypthima conjuncta*, Lecch, Entomologist, xxiv., Suppl. p. 66 (Sept. 1891).

*Male.* Allied to *Ypthima methora*, Hewitson, but the outer margin is straighter; the colour is slightly paler, and all the wings have a broad fuliginous border on the outer margin; the basal half of the secondaries is darker, limited by a dentated dusky line; the subapical ocellus of primaries has only one pupil, and is more oval in shape, and the yellowish iris is broad and suffused. On the under surface there are fewer undulated lines, and these are coarser, except on the inner area of secondaries, and more interrupted; there is a broad oblique brownish band on primaries before the ocellus, and a straight broad line of the same colour beyond the ocellus; four of the five ocelli on secondaries are united in pairs; the fifth, placed at anal angle, is large and bipupillated.

*Female.* Similar to the male, the subapical ocellus of primaries is bipupillated, and is preceded and followed by a pale band, which unite on the inner margin: there is a second ocellus midway between the apical one and the inner angle, and the upper ocellus of secondaries is much larger than the second.

Expanse, ♂ 50 millim., ♀ 58-64 millim.

This appears to be the only species of *Ypthima* occurring in China in which the subapical ocellus of primaries in the male has only one pupil. It exhibits variation in the size of ocelli, and in one specimen from Chang-yang there is no trace of ocelli on upper surface of any of the wings.

Occurs commonly in Central and Western China.

### ***Ypthima sakra.***

*Ypthima sakra*, Moore, Horsfield & Moore, Cat. Lep. E. I. C. i. p. 236 (1857); Hewitson, Trans. Ent. Soc. Lond. (3) ii. p. 290, pl. xviii. fig. 18 (1864); Marshall & de Nicéville, Butt. Ind. i. p. 232, pl. xvii. fig. 67, ♂ (1882).

“Upperside with five ocelli—one being on fore wing, three near anal angle, and one (but indistinct) near anterior angle of hind wing. Underside yellow, covered with short narrow dark brown striæ: hind wing with geminated anterior, and three single posterior, ocelli. Expanse 2 inches.” (*Moore, l. c.*)

In Chinese specimens the under surface is rather whiter and the ocelli are somewhat smaller, and although the ocelli appear to be constant as regards number, they vary in this respect on the upper surface of secondaries from two to five, the fifth being very minute, but three is the more usual number.

*Y. sakra* may be at once separated from any other *Ypthima* with which I am acquainted by the double subcostal ocellus on under surface of secondaries, which has the appearance of being placed on an ovate yellow patch instead of being surrounded with yellow in the form of the figure 8.

Common in Western China and throughout the Himalayas.

### ***Ypthima methorina.*** (Plate X. fig. 6, var.)

*Ypthima methorina*, Oberthür, Etud. d'Entom. xv. p. 15, pl. ii. fig. 15 (1891).

*Male.* Allied to *Ypthima methora*, Hewitson, but the ocelli on secondaries are of large size; two of these are placed towards outer angle, and three towards anal angle: the subapical ocellus of primaries has two silvery-blue pupils, and the third and fourth on secondaries have each one. In some specimens one or more of the other ocelli are also pupilled with silvery blue. Under surface grey; all the wings are traversed by numerous undulated grey-brown and yellowish lines, but there is no trace of rufous bands as in *Y. methora*; the ocelli are large as on the upper surface, with silvery-blue pupils and yellow irides and an outer blackish zone: on the secondaries the two ocelli at outer angle are united, and the three towards anal angle are contiguous, the lower one of this set almost touches the anal angle, and is bipupillated:

the upper pair of ocelli are often connected with the lower two by a brownish cloud in the male, and by an expansion of the iris of the second ocellus in the female; an oblique whitish band forms an internal border to the three lower ocelli, and an external border to the upper pair.

*Female.* All the ocelli much larger; irides of the subapical ocellus broader and brighter, and the pupils more conspicuous.

Expanse 52 millim.

The whitish band on under surface of secondaries, independently of the size of the ocelli, will serve to separate this species from its nearest allies.

The first, second, and fifth ocelli are subject to modification in the direction of complete effacement. Although the fact is not mentioned by M. Oberthür in his description, the figure of his *methorina* has six ocelli on upper surface of secondaries.

Var. *medusa*, var. nov. (Plate X. fig. 6, ♀.) The ocelli are smaller on both surfaces; the apical one of primaries often has the upper portion contracted; the undulated grey-brown and yellowish lines of the under surface are finer.

The form to which I have given the name *medusa* is far more common and widely distributed in Western China than that which M. Oberthür has described and figured as the type of *methorina*. The latter appears, however, to be the only form found in How-kow and at Wa-ssu-kow and Ta-chien-lu. Both the variety and the type were obtained at Huang-mu-chang and Wa-shan.

### **Ypthima iris.**

*Ypthima iris*, Leech, Entomologist, xxiv., Suppl. p. 57 (June 1st, 1891).

*Ypthima dromonides*, Oberthür, Etud. d'Entom. xv. p. 15, pl. ii. fig. 14 (1891, July *nec* June).

*Male.* Primaries grey-brown; a large oval yellowish ocellus towards apex, centred and ringed with black, contains two bluish pupils placed obliquely, the lower being nearer the outer margin; outer third of the wing paler, bounded on each side by dark curved lines, which start from near the costa and approach each other just above inner margin; marginal line blackish. Secondaries have a round ocellus above the anal angle, coloured as that on primaries, but with only one pupil; marginal and wavy submarginal lines blackish. Under surface light brown, freckled with whitish throughout; markings as above, but of a darker shade of brown; on the secondaries there are two small additional ocelli, one at the outer and the other at the anal angle; there is also a darker wavy central line.

*Female* like the male, but the ocelli are larger, and there is a small additional one at anal angle; the ground-colour is paler, and the markings are rather more pronounced.

Expanse, ♂ 54 millim., ♀ 55 millim.

In the majority of male specimens there is but one ocellus on upper surface of the secondaries; but the species exhibits aberration in this respect, as the



number of ocelli may vary from one to four. I have one example of the female with five well-formed ocelli on the upper surface of secondaries. On the under surface the number of ocelli appears to be more constant. M. Oberthür considers that his *Y. dromon* from Tsé-kou and Yunnan (Etud. d'Entom. xv. p. 15, pl. ii. fig. 12) may be a form of this species.

A large number of both sexes taken at Wau-ssu-kow and Chow-pin-sa and a few at Pu-tsu-fong in May, June, and July.

### **Ypthima ciris.** (Plate X. fig. 9, ♂.)

*Ypthima ciris*, Leech, Entomologist, xxiv. Suppl., p. 4 (Jan. 1891).

*Ypthima clinia*, Oberthür, Etud. d'Entom. xv. p. 16, pl. ii. fig. 13 (July nec June 1891).

*Male.* Fuliginous brown. Primaries have a large oval bipupillated ocellus placed obliquely towards apex; the pupils are small and of a brilliant metallic blue colour. The secondaries have two ocelli, one in each median interspace; each with one pupil of the same colour as, but rather larger than, those of primaries; there is also a minute compound ocellus at anal angle. Under surface of primaries brown, dusted and streaked with ochreous; ocellus towards apex as above, and a minute one in first median interspace; preceding these ocelli is an oblique brownish streak, which unites in a brownish blotch at the anal angle with the submarginal line. Secondaries brown, finely irrorated with whitish; a large bipupillated ocellus at outer angle, and three simple ocelli below it towards anal angle.

*Female.* Paler than the male, but otherwise similar.

Expanse 50 millim.

Some specimens have an additional ocellus attached to the lower portion of the subapical one of primaries, and a small ocellus is occasionally seen near outer angle of secondaries. *Y. clinioides*, Oberth., recorded from Yunnan, is considered by M. Oberthür to stand in the same relation to *clinia* that *dromon* does to *dromonides* (Etud. d'Ent. xv. p. 16).

This species is allied to *Y. motschulskyi*, Brem., but is distinguished therefrom by the different character of the ocelli, which, as regards shape and position on the upper surface of all the wings, are very similar to those of *Y. methora*, Hewitson.

Generally distributed in Western China, occurring up to 10,000 feet. It flies in July and August.

### **Ypthima beautei.**

*Ypthima beautei*, Oberthür, Etud. d'Entom. ix. p. 18, pl. ii. fig. 1 (1884).

Blackish brown: primaries have a large oval apical ocellus placed obliquely, with two metallic blue pupils and yellow iris; the secondaries have a small ocellus in median interspace nearest anal angle, this is pupilled with blue and ringed with yellowish; all the wings have a black

submarginal line and a less distinct line before the greyish fringes. Under surface of primaries grey-brown; ocellus and submarginal line as above: secondaries grey, sometimes tinged with violet-brown, traversed by three sinuous dark lines; the basal and submarginal bordered outwardly, and the central inwardly, with yellowish; there is a small whitish spot above the centre of the wing, and one or sometimes two ocelli before the submarginal line towards anal angle.

The *female*, which has not previously been referred to, has the ground-colour of all the wings rather paler, and the subapical ocellus is larger and brighter.

Expanse 44-49 millim.

Oberthür's type of this species appears to have only one ocellus on the upper surface of secondaries, but some specimens have a smaller ocellus, either above or below this one, and others have both additional ocelli. The size of the subanal ocellus, when one only is present, is also variable, and in one of my specimens is so very minute that it is difficult to see; the ocelli on under surface of secondaries are in some specimens only rudimentary, and in others obsolete.

So far this species has been found only at Ta-chien-lu in Western China. Mr. Pratt obtained a number of specimens there in the months of May and June.

### ***Ypthima insolita.*** (Plate IX. fig. 1, ♂.)

*Ypthima insolita*, Leech, Entomologist, xxiv., Suppl. p. 66 (Sept. 1891).

*Male.* Allied to *Y. megalomma*, Butl., with which it agrees almost exactly on the upper surface, but exhibits the following differences on the under surface:—The primaries whitish, heavily suffused with olivaceous, with a well-formed small ocellus directly under the apical one; the secondaries are whitish, with a broad, ill-defined, olivaceous band from middle of outer margin to the abdominal fold, before which it unites with another olivaceous band from the middle of costa; there is a small ocellus at outer angle, another in the first median interspace, and a still smaller one at anal angle; each of these with silvery pupil and yellow iris.

Expanse 56 millim.

I have three male specimens of this species, which were taken at Wa-ssukow in Western China, at an elevation of 5000 feet, in June.

### ***Ypthima megalomma.*** (Plate IX. fig. 2, ♂.)

*Ypthima megalomma*, Butler, Cistula Entomologica, i. p. 236 (1874).

Wings above grey-brown, primaries with a very large oblique subapical black ocellus, bipupillated with plumbaceous, and encircled by a stramineous iris; secondaries with a large subanal ocellus, similar to that of primaries, but only about one third the size and unipupillate; body grey-brown: wings below brown, densely hatched with white; primaries with ocellus of upper surface, but larger and clearer, also a punctiform ocellus upon first median interspace;

secondaries with a discal series of very indistinct pale ochraceous ocelli between the nervures.

Expanse of wings 2 inches 2 lines.

“Shanghai (*W. B. Pryer*). B.M.” (*Butler, l. c.*)

Mr. Butler adds that only one specimen was taken by Mr. Pryer, and that the species is “chiefly remarkable for the enormous size of the ocellus of primaries, which gives it somewhat the aspect of a *Callerebia*.”

This species was first discovered by Mr. W. B. Pryer in the Snowy Valley, Ningpo (*nee* Shanghai), in which locality I also took specimens in April 1886. The type, which appears to be a male, is in the National Museum at South Kensington. It seems to be a fairly constant species, as the only departure from typical marking that I have observed is exhibited in two examples from Chang-yang; in each of these there is a small ocellus below the subapical one of primaries. The female is paler than the male, the wings are broader and the ocelli larger.

Common in Central China during the months of April and May, and it also occurs at Wa-ssu-kow, Western China, in June, at an elevation of 5000 feet.

### ***Ypthima prænubila*.** (Plate X. fig. 8, ♂.)

*Ypthima prænubila*, Leech, Entomologist, xxiv., Suppl. p. 66 (Sept. 1891).

*Male*. Fuscous brown; all the wings have a broad interrupted blackish submarginal band; the subapical ocellus of primaries is somewhat ovate, with two bluish pupils (set directly one below the other) and suffused yellowish iris; on the secondaries there are two ocelli towards anal angle, the second bipupillated. The under surface is whitish, tinged with ochreous on primaries and along outer margins of secondaries; all the wings have a number of transverse undulated brown lines, and the primaries have a brown band from the centre of the wing to the inner margin; the submarginal band is of the same colour. On the secondaries there is an ocellus just below costa and towards outer angle, and there are two others at anal angle; all these are fairly large and well defined.

*Female*. Similar to the male, but the ocellus at anal angle is sometimes obsolete on the upper surface, and there is often an additional one in the second median interspace; on the under surface all these ocelli are well defined.

Expanse, ♂ 56–60 millim., ♀ 64 millim.

Occurs at Ta-chien-lu, May and June; Chia-kou-ho and Moupin, July; Omei-shan, July and August; Wa-shan, August; Kiukiang.

The male has sometimes three ocelli on upper surface of secondaries, and some examples of the female have a small ocellus below the subapical one of primaries.

**Ypthima motschulskyi.** (Plate X. fig. 7, var.)

*Satyrum motschulskyi*, Bremer & Grey, Schmett. Nordl. China's, p. 8 (1853).

*Satyrum motschulskiji*, Ménétrés, Enum. Corp. Anim. pt. i. p. 47, pl. vi. fig. 5 (1855).

*Ypthima motschulskiji*, Hewitson, Trans. Ent. Soc. Lond. 1864, p. 290.

*Ypthima motschulskyi*, Fixsen, Rom. sur Léop. iii. p. 310 (1887).

This appears to be a most variable species. Some specimens I have from Corea and the Isle of Kiushiu, Japan, agree fairly well with Ménétrés's figure of a specimen from Pekin; but in Central and Western China the species is represented by a form which I now describe as

Var. **perfecta**, var. nov. (Plate X. fig. 7, ♂.) *Male*. The apical ocellus of primaries is entire, and that towards anal angle of secondaries is larger; the pupils of both are distinctly blue; all the wings have a blackish submarginal line, but that on secondaries is most distinct. The under surface is whiter; all the wings often have a submarginal brown band, and there is frequently a central oblique brown band on primaries, but these characters are subject to modification; ocelli as in the type.

*Female*. The apical half of primaries and outer third of secondaries clouded with whitish grey.

The above description refers to the commoner form of *Y. motschulskyi* in Western China; but some of the specimens from thence-exhibit considerable variation in the number of ocelli. In some examples there is a small ocellus below the apical one of primaries; in others there is a geminated ocellus at anal angle of secondaries, and in a few specimens there are four ocelli on the secondaries—one at outer angle and three towards anal angle. This variation of ocelli is chiefly found on the upper surface, but it occasionally occurs on the under surface also. The brown bands of under surface are often very wide on primaries, and sometimes unite in a brown patch on inner margin; in some specimens the whitish ground-colour forms an oblique band on the secondaries from outer angle to inner margin.

Common and generally distributed in Western China, where it occurs throughout the summer at various elevations between 5000 and 10,000 feet. It is also found at Chang-yang in Central China, and in the Corea and the Isle of Kiushiu, Japan.

**Ypthima newara.** (Plate X. fig. 5, var.)

*Ypthima newara*, Moore, Proc. Zool. Soc. Lond. 1874, p. 567; Marshall & de Nicéville, Butt. Ind. i. p. 222 (1882).

This Indian species is represented in Central China by a form to which I give the name of

Var. **chinensis**, var. nov. (Plate X. fig. 5, ♂.) The basal two thirds of the wings in both sexes is clouded with fuliginous; the apical ocellus of primaries is larger, the iris broader, and the small subanal ocellus of secondaries, when present, is nearer the large one than in the type. The under surface is whitish grey, without any ochreous tint, striated with brown; the inner marginal area of primaries is also clouded with fuliginous brown, and the two lower ocelli of secondaries are invariably contiguous; (the ocellus at outer angle of secondaries is very much smaller in the male); there is no brown submarginal band, and the fringes are much paler. In some examples of each sex there is a small ocellus below the apical one of primaries, and one or two specimens of the female have the outer half of all the wings irrorated with grey, as in Indian specimens of the same sex.

Expanse, ♂ 50 millim., ♀ 56 millim.

Occurs at Kiukiang in May, and at Chang-yang in August; but does not appear to inhabit Western China.

According to Marshall and de Nicéville, *Y. newara* frequents Nepal, Sikkim, Assam, Cachar, Upper Burma; and specimens were obtained by the Yunan Expedition. These last will probably prove to be identical with *Epinephele phania*, Oberthür (Etud. d'Ent. xv. p. 17, pl. 2. fig. 17), also from Yunan.

### **Ypthima avanta.**

*Ypthima avanta*, Moore, Proc. Zool. Soc. Lond. 1874, p. 567; Marshall & de Nicéville, Butt. Ind. i. p. 218, pl. xvii. fig. 66, ♂ (1882); Waterhouse, Aid Ident. Ins. ii. pl. 179. fig. 6.

“Upperside dark brown, with an indistinct bipupilled ocellus on the fore wing, and two subanal ocelli on hind wing. Underside grey, numerously covered with dark brown narrow striae, and crossed with three brown fasciæ, the subbasal being indistinct. Fore wing with a bright oval ocellus bipupilled with silver. Hind wing with seven small prominent silver-pupilled ocelli, the upper third minute, the two anal geminated.” (Moore, *l. c.*)

“*Y. avanta* closely resembles *Y. singala* on the upperside, but has a sexual patch on the fore wing of the male, which *Y. singala* lacks. On the underside the ocellation, too, is somewhat similar, but *Y. singala* almost always lacks the transverse dark fasciæ, which in *Y. avanta* are conspicuous. From *Y. indecora* it differs on the upperside in having the ocelli of the hind wing blind, and that of the fore wing small, very indistinct, sometimes quite obsolete; and on the underside in having the ocelli distinct (though varying in size in different specimens), and always prominently pupilled with silver. From *Y. philomela* it is distinguished by the four lower ocelli on the underside of the hind wing being arranged in linear order, not in pairs in echelon.” (Marshall & Nicéville, *l. c.*)

I have only received specimens of this species from Chang-yang and Ichang, Central China, although it probably occurs in other parts of that country, The apical ocellus on upper surface of primaries is usually indistinct and

often entirely absent. One male expands 43 millim., which is unusually large for this species.

According to Marshall and de Nicéville, *Y. avanta* is found in the Western Himalayas from April to August. It is common in Kulu, and its range extends to Kashmir on the west and to Sikkim on the east.

### **Ypthima philomela.**

*Papilio philomela*, Johanssen, Amœn. Acad. vi. p. 404 (1764).

*Papilio baldus*, Fabricius, Syst. Ent., App. p. 829 (1775).

*Ypthima baldus*, Hewitson, Trans. Ent. Soc. Lond. (3) ii. p. 286 (1864).

*Ypthima baldus*, Pryer, Rhopalocera Nihonica, p. 30, pl. ix. fig. 3.

*Ypthima philomela*, Marshall & de Nicéville, Butt. Ind. i. p. 216 (1882).

*Ypthima argus*, Butler, Proc. Linn. Soc. Lond., Zool. p. 56 (1878).

*Ypthima evanescens*, Butl. Ann. & Mag. Nat. Hist. (5) vii. p. 134 (1881).

*Male*. Brown. Primaries with a bipupillated subapical ocellus; a patch of darker scales on each side of the median nervure. Secondaries have from two to six ocelli. Under surface pale greyish white, with numerous fine brown transverse lines and three brown fasciæ, that nearest the base often indistinct: primaries with ocellus as above: secondaries with six complete ocelli.

*Female*. Paler, with a broad whitish band striated with brown on the submarginal area of all the wings; the ocelli, which are similar to those of the male, are set in this band.

Var. **argus**, Butler. "Alæ supra fuscæ; anticæ ocello subapicali nigro ochreo cincto alboque bipupillato; posticæ maris ocellis duobus inter venas apud marginem analem positiss; feminae ocellis tribus uno subapicali minuto. Corpus fuscum.

"Alæ subtus albo-cinereæ fusco-strigosæ; anticæ maris ocello ut supra; feminae ocello obscuro albo ad cellæ finem; posticæ ocellis quinque subapicalibus tribusque analibus, uno anali bipupillato. Corpus cinereum. Alar. exp. unc. 1½.

"Differs from *Y. baldus*, Fab., in having five instead of six ocelli on hind wings. Fore wings: costa longer; female showing an extra ocellus at the end of the cell below, also with a small subapical ocellus above." (*Butler, l. c.*)

Var. **evanescens**, Butler. "Above like *Y. lisandra*, below more like *Y. zodia*; wings below white, densely striated with short brown lines, and crossed before the middle by two subparallel yellowish stripes, the outer one angulated on the secondaries; external border also regularly yellowish, but paler than the stripes: primaries with a large subapical yellow-zoned black ocellus, with two silver pupils; secondaries with six very minute yellow-zoned black ocelli with single silver pupils; these ocelli are arranged as in *Y. stelleræ*. Expanse of wings 1 inch 5 lines.—Nikko." (*Butler, l. c.*)

This species is very variable both in size and shape; also as regards the number and definition of ocelli, which on the secondaries range from one in

a specimen from Hakodate to five in a specimen from Chang-yang. It has a very wide geographical range, extending throughout the Indian Region, China, and Japan, and is also found in the Corea and Amurland.

**Ypthima zodia.** (Plate X. fig. 10, ♂.)

*Ypthima zodia*, Butler, Trans. Ent. Soc. Lond. 1871, p. 402.

*Ypthima albescens*, Pougade, Ann. Soc. Ent. Fr. 1885, p. xli.

“Alæ supra fuscae, anticae ocello mediocri nigro bipupillato, flavo-cincto: posticae ocellis tribus subanalibus, tertio ad angulum ani minimo, nigris albo-pupillatis, flavo-cinctis; alæ subtus cinereo-albidæ, fusco-reticulatæ; anticae striis duabus mediis male conspicuis, externa cum stria submarginali simili continua, fuscis; ocello superno majori; posticae fascia lata olivacea, undulata; ocellis sex minutis, duobus subapicalibus, duobus discali-analibus, duobus analibus contiguus, nigris, albo-pupillatis, flavo-cinctis. Exp. alar. unc. 1, lin. 7.

“Allied to *Y. lisandra* and *Y. argus*, but differing from all the known species in the broad central fuscous band on the under surface of the hind wings.” (*Butler, l. c.*)

Var. **albescens.** “Envergure: 44 millim. Dessus d’un brun terreux; ailes supérieures ayant une grosse tache à peu près ronde, d’un noir bleuâtre, finement cerclés de jaune clair et traversée par deux points gris perle brillants; elle est située vers l’apex à partir du dernier tiers de l’aile. Inférieures avec un ou deux gros yeux noir bleuâtre, pupillés de gris perle, et cerclés de jaune clair, suivis d’un autre semblable, mais très petit, situés vers l’angle interne. Le bord interne avoisinant cet angle est blanchâtre, finement marbré de brun.

“Dessous des quatre ailes traversé en largeur par de fines marbrures brunes; le fond des ailes supérieures est d’un blanc jaunâtre, l’œil de l’apex est pareil à celui du dessus, mais plus largement cerclé de jaune. Ailes inférieures à fond blanc, traversées en largeur, à peu près au milieu, par une large bande anguleuse jaune olivâtre, et ornées de cinq yeux noirs, pupillés de gris perle brillant, à iris jaune cerclé d’une ombre brune: deux sont situés vers l’angle externe, plus en arrière que les trois autres de l’angle interne correspondant à ceux du dessus, le dernier est souvent double.

“Cinq ♂ de Mou-Pin: coll. du Muséum.” (*Pougade, l. c.*)

*Y. zodia* occurs throughout China during the spring months. There is considerable variation in the number and size of ocelli on under surface of secondaries; in some specimens they appear to be as well defined as in typical *Y. philomela*, whilst in others they are reduced to mere specks. As far as I am aware, *Y. zodia* only occurs during the spring months; it is quite possible that it is the vernal form of *Y. philomela*, as represented in China, but it can always be distinguished by the transverse band-like markings on the central area of the under surface of all the wings. Until the test of breeding has been applied, I think it safer to retain *Y. zodia* as a species.

## Genus RAGADIA.

*Ragadia*, Westwood, Gen. Diurn. Lep. p. 376 (1851).

Distinguished from *Neonympha* by "the very singular arrangement of the veins of its wings, especially of the hind pair; the lower discocellular vein being placed almost at the base of the wing, and furnished with an elongated pouch in the males. The costal vein of the fore wing is alone swollen at the base." (*Westwood, l. c.*)

**Ragadia latifasciata.** (Plate X. fig. 2, ♂.)

*Ragadia latifasciata*, Leech, Entomologist, xxiv., Suppl. p. 25 (1891).

*Male.* The central area of primaries is traversed by a broad conical white fascia, the apex of which does not reach the costa, but the white colour extends slightly along the inner margin on each side of its base; between fascia and base of wing are two pallid transverse bands, and there is a similar band before the outer margin; neither of these is continued through to the costa. Secondaries have a broad white fascia before the middle of the wing, and an interrupted white submarginal band; the pallid bands of primaries are continued, and there are some dusky round spots on the central area. Under surface brownish; the transverse markings of all the wings are white, but those on the primaries approach nearer to the costa, and these wings have a white line on the outer margin; there are eight ocelli (black spots with silver centres and yellowish rings) on the primaries, and four on the secondaries; of the latter the second is large, oval, and bipupillated,—the fourth also has two pupils.

*Female.* Similar to the male, but the inner margin is broadly white, as also is the lower portion of submarginal band; the submarginal band of secondaries is broad and uninterrupted.

Expanse, ♂ 50 millim., ♀ 54 millim.

Resembles *Ragadia crisilda*, Hewitson, on the under surface.

This seems to be a rare species, as I have only received a few specimens from Moupin, where they were taken in July.

## Genus ACROPTHALMIA.

*Acroptalmia*, Felder, Wien. ent. Mon. v. p. 305 (1861).

"*Ragadia*, Westwood, sat affine. Hocce genus differt ramo subcostali primo alarum anticarum ad cellulæ extimum oriente, vena discocellulari suprema in iis abortiva, ramis subcostalibus posticarum longius petiolatis, vena discocellulari superiore in iis præsentem, inferiore angulum acutissimum formante, infra cum tantum plicæformi, vena discoidali subrecta ramisque ultimis medianis vena discocellulari interveniente separatis." (*Felder, l. c.*)



**Acrophthalmia thalia.** (Plate X. fig. 1, ♂.)

*Acrophthalmia thalia*, Leech, Entomologist, xxiv., Suppl. p. 25 (1891).

*Male.* Allied to *Acrophthalmia chione*, Feld.\* but the white central band is narrower, extending from costa to inner margin on the secondaries, and from inner margin almost to costa on the primaries; the ocellus on the upper surface of primaries is placed almost exactly as in *A. chione*, but, although smaller, is more distinct, and has a minute white pupil; the secondaries also have a distinct ocellus towards anal angle; there are two pale lines parallel with outer margin on all the wings, but these are most clearly defined on the secondaries. On the under surface the ocelli are as above, but ringed with fulvous, and there are, in addition, one ocellus at outer angle of secondaries and two smaller ones between it and that at anal angle; the white central band and double marginal line on all the wings exactly as above, but there is also a narrow leaden-grey submarginal band on each wing; that on the primaries starts from the costa before the apical ocellus, around which it curves, and then continues a slightly sinuous course to the inner margin; on the secondaries the band is deeply indented between the two larger ocelli. Fringes white.

*Female.* Similar to the male, but the central white band is rather broader and the external margins of the wings are rounder.

Expanse 50 millim.

Occurs at Pu-tsu-fong and Omei-shan, in July.

## Genus CÆNONYMPHA.

*Cænonympha*, Hübner, Verz. bek. Schmett. p. 65 (1816); Westw. Gen. Diurn. Lep. p. 396 (1851).

“BODY small, very hairy; wings entire, rounded; fore ones with the three principal veins swollen at the base.

“HEAD rather small, clothed, especially in front, with long hairs, not forming a conical tuft.

“Eyes prominent, naked.

“Antennæ short, scarcely half the length of the fore wings, slender, annulated with white, terminated by an elongate ovate club, which is channelled beneath.

“Labial palpi very compressed, porrected obliquely, quite straight, and elevated to about the level of the top of the eyes, and advanced further in front than the length of the head, thickly clothed beneath with long bristly hairs set on at right angles; the terminal joint rather long, slender, acute, and much less slightly clothed with hairs.

“THORAX small, very thickly hairy.

“Fore wings rather large, entire, hairy, and with long fringe. Costal margin moderately arched; apex rounded. Apical margin convex, nearly three fourths of the length of the costal. Inner margin nearly straight, about equal in length to the apical margin. Costal, median, and submedian veins equally swollen at the base. Postcostal vein with its branches free; the second arising just beyond the extremity of the discoidal cell, and the third and fourth

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\* Reise Nov., Lep. iii. p. 486, pl. 68. figs. 12, 13 (1867); Staud. Exot. Tagf. p. 231, pl. 82 (1888).

at equal distances apart from the second and the tip of the wing. Upper discocellular vein very short, straight, arising at about half the length of the wing; middle discocellular much longer, directed towards the base of the wing, its tip curved a little outwards; the lower discocellular still longer, and continuous with the tip of the middle one, oblique, directed outwards, and uniting with the third branch of the median vein at about the same length from its origin as the length of the outer discocellular itself, and rather shorter than the space between the first and second branches of the median vein.

“*Hind wings* triangularly ovate, hairy; fringe long. Outer margin very convex and entire. Inner margin generally emarginate towards the extremity. Costal vein not extending half the length of the costa. Postcostal vein arising much nearer the body than the precostal, branching at a considerable distance from its base. Upper discocellular arising at a short distance from the base of the branch, curved; outer discocellular considerably longer, oblique; uniting with the third branch of the median vein at a distance from its origin about equal to two thirds of the space between the first and second branches of the median vein; closing the discoidal cell in a rather acute point near the middle of the wing.

“*Fore legs* of the male small, very densely hairy. Femur and tibia of nearly equal length. Tarsus not quite half the length of the tibia, simple. *Fore legs* of the female longer than those of the male, very slender. Tibia longer than the femur, moderately hairy. The tarsus equal in length to the tibia, very slender, articulated, not dilated at the tip; the joints with very minute spines at the extremities beneath. Ungues wanting.

“*Four hind legs* moderately long, scaly. Femur slightly clothed beneath with hairs. Tibiæ armed beneath at the sides with moderately long and acute bristles; tibial spurs long. Tarsus long, armed beneath and at the sides with rather long bristly hairs. Ungues acute, curved, entire.

“**ABDOMEN** moderately long and slender.” (*Westwood, l. c.*)

### ***Cænonympha œdipus.***

*Papilio œdipus*, Fabricius, Mant. Ins. ii. p. 31 (1787).

*Papilio geticus*, Esper, Schmett. i. 2, pl. 102. fig. 2, pl. 107. fig. 5 (1790?).

*Cænonympha annulifer*, Butler, Ann. & Mag. Nat. Hist. (4) xix. p. 91 (1877).

*Cænonympha œdipus et annulifer*, Pryer, Rhop. Nihonica, p. 32, pl. 10. fig. 3.

Var. **annulifer**, Butl. “Nearly allied to *C. geticus*, but larger, longer in the wing, much darker; on the underside with the plumbagineous streak, which bounds the ocelli of secondaries internally, straight on its inner edge instead of undulated. Expanse of wings, ♂ 1 inch 7 lines, ♀ 1 inch 10 lines.—About 370 miles from Tokei.” (*Butler, l. c.*)

My specimens of *C. œdipus* from Japan are not specifically separable from European examples. In Europe the species varies in size, and the lustrous streak of under surface is also subject to variation, sometimes assuming the character of a broad abbreviated fascia and as often straight as undulated.

Dr. Henry C. Lang (‘*Butterflies of Europe*,’ p. 304) says that the larva is green, with a darker dorsal stripe and pale yellow lateral line, and that it feeds on *Carex* in July and August.

Occurs in the mountain-districts of Central Japan and at Fusan and Gensan, in the Corea, in June and July.

In Central and Southern Europe this is a local species, frequenting moist woods and meadows in June and July.

### **Cænonympha hero.**

*Papilio hero*, Linnæus, Fauna Suec. p. 274 (1761).

*Cænonympha hero*, Lang, Butterflies Europe, p. 304, pl. lxxv. fig. 1 (1884).

*Cænonympha hero*, var. *perseis*, Lederer, Verh. zool.-bot. Ges. Wien, 1853, p. 360 ;  
var. *sibirica*, Staudinger, Cat. p. 32 (1871).

“ Expands from 1·10 to 1·15 inch. Wings dull brown. The fore wings in the male are usually uniform brown. Hind wings with a submarginal row of orange spots, four in number, and with black centres. Underside: fore wings brown; hind margin reddish, with a row of small black spots and a leaden line. Hind wings brown, with a submarginal row of black spots, five or six in number, surrounded by orange rings and with silvery-white centres; internal to these is a white line, and external to them a leaden one. The female is lighter and more strongly marked than the male, and has the black spots surrounded by orange rings on the fore wings.” (*Lang, l. c.*)

*C. hero* is a common species in Central Europe, Scandinavia, and Livonia; according to Mr. Elwes (*Proc. Zool. Soc. Lond.* 1881, p. 909) it is also found at Raddefskaia and on the Ussuri in Amurland.

Var. *perseis* is larger than the type, and the white markings on the under surface are more strongly defined. It occurs in the Altai, and I found this form of *C. hero* common at Gensan, Corea, in July 1886. M. Oberthür records it from the Isle of Askold (*Etud. d'Ent.* v. p. 17), and Mr. Elwes (*l. c.*) says that he has received specimens from Amurland.

### **Cænonympha amaryllis.**

*Papilio amaryllis*, Cramer, Pap. Exot. iv. pl. 391. figs. A, B (1782).

*Cænonympha amaryllis*, Lang, Butterflies Europe, p. 309, pl. lxxv. fig. 8 (1884).

“ Expands from 1·0 to 1·50 inch. All the wings light fulvous. Fore wings with a submarginal row of black spots, very indistinct, except those near the apex and anal angle. Underside: fore wings light yellowish fulvous, with a submarginal row of black spots, having silvery-white centres and yellow rings. Hind wings greenish grey, with a submarginal light orange band, containing a row of spots, similar in character to those of the fore wings; internal to this is a slightly indicated white band.” (*Lang, l. c.*)

Occurs in the Ural, the Altai, and the Amur, and has been recorded from Chefoo and Pekin. I have received specimens from M. Grum-Grshimailo,

taken by himself in Amdo. M. Alphéraky (Rom. sur Léop. v. p. 118) describes two varieties of this species, viz. var. *ordossi* and var. *evanescens*, discovered by M. Potanine in North-western China.

**Cœnonympha semenovi.** (Plate XI. fig. 4, ♂.)

*Cœnonympha semenovi*, Alphéraky, Rom. sur Léop. iii. p. 405, v. pp. 82, 118, pl. iv. fig. 7.

“Supra dilutissima brunnea ciliis albidis, ♂ alis anticis orbiculo (puncto) apicali albido, posticæ serie antemarginali orbiculorum albidorum, ♀ supra dilutior, orbiculis vix conspicuis; subtus anticæ ut supra, posticarum pagina interna virescenti grisea, externa maculis magnis orbiculisque antemarginalibus albis.” (*Alphéraky, l. c.*)

Expanse 25–26 millim.

M. Alphéraky records the species from Tsaidame on the Bourkhane-Bouddha range, and from a place between Tcha-tchi-kou and Tchangla.

Occurs in Western China at Ta-chien-lu and Pu-tsu-fong in July, and at How-kow in Thibet in July and August. In the latter locality it is found at an elevation of 10,000 feet, and in the other places at about 7000 feet. There is very little variation, but one of my female specimens agrees with the male in colour.

M. Grum-Grshimailo has sent me examples which he took in Amdo; these are rather paler than my Chinese specimens.

**Cœnonympha typhon.** (Plate XI. fig. 3, var.)

*Papilio typhon*, Rottemburg, Naturf. vi. p. 15 (1775).

*Papilio davus*, Fabricius, Gen. Ins. p. 259 (1777).

Var. **tydeus**, var. nov. (Plate XI. fig. 3, ♂.) Pale fulvous, usually without markings, but one of the specimens has a small subapical black spot indistinctly ringed with paler; the under surface is very similar in colour and marking to pale forms of the species from the Alps, but the pale band of secondaries is more broken, and its middle portion represented by a longitudinal bar. The sexes do not differ in colour or marking.

Expanse 38–40 millim.

Occurs commonly at How-kow, Thibet, and flies in July and August at an altitude of 10,000 feet.

In Northern and Central Europe this species frequents mountain meadows and moorland. It is local, but common where it occurs. There are several named local races, one of which (*isis*, Thnb.) is recorded from Lapland and the Amur (Ménétriés, in Schrenck's Reisen, p. 43. no. 84).

The larva feeds on *Rhynchospora alba*, and has been described by Newman, 'British Butterflies,' p. 100, and by Buckler, 'Larvæ of British Butterflies and Moths,' i. p. 35.

M. Alphéraky (Rom. sur Lép. v. pp. 118-121) records the following species from North-western China: *Cænonympha sinica*, Alph.; *Cænonympha pavonia*, Alph.

### Genus EREBIA.

*Erebia*, Dalman, Svensk. Handl. 1816, p. 58; Westwood, Gen. Diurn. Lep. p. 376 (1851).

"BODY moderately robust, hairy; wings generally black or dark brown, the anterior often with one or more fulvous or red patches near the extremity, bearing ocelli.

"HEAD moderately-sized, clothed with very long hairs.

"Eyes prominent, lateral, naked; the anterior half differently coloured from the posterior in dried specimens.

"Labial palpi porrected obliquely; the tips ascending higher than the level of the tops of the eyes, and reaching further in front than the length of the head; very densely clothed with long hairs, extending in front at right angles and almost concealing the terminal joint, which is slender, short, and villose.

"Antennæ not half the length of the fore wings, slender, the joints scarcely distinct, terminated by an oval, rather short, but gradually formed club, which in some species (*Epistigne*, &c) is short, broad, and spoon-shaped; its basal portion hollowed within, but its extremity curved outward and obtuse,

"THORAX short, oval, very hairy.

"Fore wings triangularly ovate, entire, and convex along the apical margin. The costal margin but slightly arched; apical angle rounded. Apical margin about three fourths of the length of the costal; hinder angle rounded. Inner margin scarcely as long as the apical, nearly straight. Costal vein extending rather beyond the middle of the costa, slightly swollen at the base, or not thicker than the rest. Postcostal vein slender; its first and second branches arising before the anterior extremity of the discoidal cell (the second sometimes close to it, or even slightly beyond it, as in *Epistigne*); the third and fourth branches free, arising at a greater or less distance apart, beyond the cell. Upper discocellular vein generally obliterated (in *Blandina* it is, however, present, but very short and transverse); middle discocellular shorter than the outer one, but rather variable in its direction (being shorter, straight, and transverse in *Epistigne*, whilst it is arched in *Blandina*); outer discocellular vein considerably longer, nearly straight, but oblique, its extremity being directed towards the apical margin, closing the discoidal cell almost transversely nearly at the middle of the wing; uniting with the third branch of the median vein at a shorter distance from its base than exists between the first and second branches; the third branch being angulated at the place of junction, beyond which it is nearly straight. The median and postmedian veins not dilated at the base.

"Hind wings suboval, entire along the anal margin. The outer margin also entire, or but slightly scalloped; beneath often marked with dark freckles, with a broader dark sub-

central fascia. Subcostal vein arising nearer the body than the precostal; its branch arising at a moderate distance from the base of the wing. The upper discocellular vein longer than the space between its base and that of the branch, and sometimes rather arched; the lower discocellular considerably longer, straight, more oblique, uniting with the third branch of the median vein at a short distance from its base; closing the discoidal cell rather beyond the middle of the wing.

“*Fore legs* of the male extremely minute, concealed among the hairs of the breast, very densely hairy. The tarsus much shorter than the tibia, and very slender. *Fore legs* of the female much longer, scaly, slender; the outside of the tibia and tarsus with a few very long setæ. The tarsus nearly as long as the tibia, scaly, not very distinctly articulated; the extremity armed with fine setæ-like spines.

“*Four hind legs* moderately long, slender, scaly. Femur clothed within with long hairs. Tibia armed with a few spines, those on the sides beneath forming rows. Tarsus nearly as long as the tibia, more thickly and irregularly spined. Ungues simple. Pulvilli very minute.

“**ABDOMEN** moderately short and slender.” (*Westwood, l. c.*)

### **Erebia sedakovii.** (Plate IX. fig. 10, var.)

*Hipparchia sedakovii*, Eversmann, Bull. Mosc. 1847, pl. i. figs. 5, 6.

*Erebia sedakovii*, Herrich-Schäffer, Schmett. Eur. i. figs. 591, 592; Pryer, Rhop. Nihon. p. 31, pl. ix. figs. 4a, 4b.

*Erebia nipponica*, Janson, Cistula Entom. ii. p. 153 (1877).

*Erebia scoparia*, Butler, Proc. Zool. Soc. Lond. 1881, p. 849; Waterhouse, Aid Ident. Ins. ii. pl. 105.

*Erebia alcmena*, Gr. Grshimailo, Horæ Ross. 1891, p. 457.

Var. **nipponica**, Janson. “Above dark brown, body and base of wings blackish; primaries with a large ochreous patch beyond the middle extending from the subcostal nervure almost to the inner margin, subovate, slightly narrowed in the middle and dentate externally, containing a double black spot in front and a smaller round one behind; secondaries with an ill-defined reddish-brown transverse band beyond the middle, containing three small round black spots near its outer edge, the one nearest the anal angle with a white pupil: beneath brown, primaries marked as above; secondaries with the band slightly indicated by dusky brown, the white pupil alone distinct. In the female the black spots on both wings have conspicuous white pupils above and below, the spots on the upperside of secondaries are only partly surrounded with reddish ochreous in place of the band in the male, beneath they have a large dusky white basal patch and a conspicuous silvery-white sinuous band. Expanse of wings 1 inch 10 lines.—Taken by Mr. Jonas on Assamayama, at an elevation of about 7000 feet. Allied to *E. stygne*, Fisch. Ent. Russ. i. pl. i. fig. 2.” (*Janson, l. c.*)

Var. **scoparia**. “Allied to *E. nipponica*, but broader and altogether different on the under surface. Wings above rich sericeous fuliginous brown; primaries darker than the secondaries; the disk crossed by a broad, irregular, bright ochreous band not reaching the costal or inner margins, enclosing three black ocelli with white pupils, the two upper ones confluent and placed upon the radial interspaces, the third placed upon the first median interspace;

secondaries with three white points on the median and radial interspaces, only the first (on the first median interspace) distinct and snow-white: thorax fuliginous brown, abdomen blackish. Primaries below nearly as above, but the internal area greyish and the external border bright chocolate-brown; secondaries much as in *E. medea*, bright chocolate-brown, with faint indications of a slightly more olivaceous broad angular belt just before the middle; the disk slightly greyish, showing the white dots of the upper surface distinctly, the first of these is black-edged; fringe of all the wings dull black, mottled with testaceous; pectus fuliginous brown, legs and venter pale brown. Expanse of wings, 2 inches 1 line.—Kuramat-sunai, Shiribetsu, Hokkaido, 2nd week in August (*coll. M. Fenton*).” (*Butler, l. c.*)

Var. **alcmena**. (Plate IX. fig. 10, ♂.) “Species *Erebia sedakovii*, Ev., proxima, sed alis anticis supra fascia fulva introrsum recurvata, fimbria latiore; subtus anticis cerasino-fulvis, apice, costa et area interna griseo mixtis, posticis griseo-fuscis, pictura distinctissima, limbo magnopere dentato. ♂ ♀ 22-23 mm. In regione Amdo dicta, in montibus Dschachar reperta.” (*Gr. Grshimailo, l. c.*)

*E. nipponica*, Jans., *scoparia*, Butl., and *alcmena*, Gr. Grsh., are certainly nothing more than local races of the Siberian *sedakovii*. The form *alcmena* occurs plentifully at Ta-chien-lu and How-kow; the Chinese examples, however, differ from specimens sent me by M. Grum Grshimailo from the Dshachar mountains in the paler fascia of primaries and greyer coloration of under surface of secondaries. It flies at an altitude of 10,000 feet in July.

### **Erebia herse.** (Plate IX. fig. 7 ♀, 8 ♂.)

*Erebia herse*, Gr. Grshimailo, Horæ Ross. 1891, p. 457.

“Alis ♂ supra nigris, limbo anticarum, sæpe venam transversam superante, lato, cerasino-fulvo, maculis nigris; apice permagna, albo-pupillata, in cellula 2<sup>a</sup> parva, nonnumquam deficiente, notato. Fimbria lutea, in nervis nigro-fusco interrupta. Subtus disco anticarum cerasino-fulvo, basin versus obscuriore, late nigro-fusco circumdato, apice pallidiore, grisescenti mixto et tenuiter nigro-fusco marmorato; macula ocellari fulvo circumdata; posticis plus minusve unicoloribus nigro-fuscis et nigro marmoratis, maculis parvis, sæpe vix conspicuis, sordide griseis notatis.

“Alis ♀ supra et subtus pallidioribus maculis majoribus, limbo fulvo anticarum cum area fulva cellulae mediæ sæpe confluenta.

“Exp. ♂ ♀ 23-24 mm.”

M. Grum Grshimailo says that this species, which is allied to *Erebia kalinda*, Moore, was discovered by himself in the mountains of Sinin. I have specimens from Ta-chien-lu and How-kow, and these are larger than the Sinin specimens, but agree with them in all other respects, excepting one female example, which has two white pupils in the subapical ocellus of primaries and three ocelli below. On the secondaries of this specimen there is also a black spot between the first and second median nervules.

**Erebia saxicola.**

*Erebia saxicola*, Oberthür, Etud. d'Entom. ii. p. 32, pl. iv. fig. 1 (1876).

“ *L'Erebia saxicola* a les ailes un peu arrondies, brun très-foncé en dessus, avec la partie médiane de l'aile supérieure marquée d'une tache plus foncée et veloutée, et une double pupille blanche placée dans une macule ronde, très-noire, située vers la sommet de l'aile. En dessous, l'*Erebia saxicola* a l'aile supérieure largement lavée de fauve-carminé avec la côte et le bord externe gris brun. La tache orbiculaire noire du dessus se reproduit en dessous. Elle est de même pupillée de deux points blancs. L'aile inférieure est d'un brun clair un peu jaunâtre, marquée d'une quantité de petits traits bruns. Un petit point noirâtre se trouve entre deux nervures, près de l'angle anal, et une légère éclaircie se détache sur la teinte du fond, qu'elle traverse en une bande parallèle au bord extérieur. Les antennes sont très-finement annelées de noir et de blanc.

“ *L'Erebia saxicola* a un aspect assez grêle, l'abdomen mince et court, les ailes d'une texture peu épaisse ; elle forme un groupe un peu à part dans le genre *Erebia*.” (Oberthür, l. c.)

Mons. Oberthür says that this species is found on the Ourato mountains in Mongolia, and occurs at an altitude of about 6000 feet. It is fond of resting on rocks and secreting itself among stones.

**Erebia ruricola.** (Plate IX. fig. 4, ♂.)

*Erebia ruricola*, Leech, Entomologist, xxiii. p. 187 (1890).

*Callerebia delavayi*, Oberthür, Etud. d'Entom. xv. p. 13, p. ii. fig. 18 (1891).

*Male*. Dark brown ; central area of primaries blackish, outer third paler ; a large black spot with two white pupils, and faintly encircled with pale brown towards apex ; there is often a white dot towards anal angle of secondaries. Under surface grey-brown : on primaries the ocellus of upper surface is reproduced, and is ringed with pale fulvous ; below it is a small ocellus, and there is sometimes a still smaller one between them, placed on the edge of the former ; below apex there is a reddish-brown cloud, and there are indications of a band of the same colour between large ocellus and discoidal cell : the secondaries are traversed by reddish-brown lines, the most conspicuous being two broad ones from middle of costa, which terminate just before median nervure, and one from middle of abdominal margin to outer margin ; there is a submarginal series of white dots ; the outer margin and centres of the wing are also dashed with white.

Expanse 58 millim.

Nearly allied to *E. saxicola*, Oberth., but the white pupils of apical ocellus are placed more directly one under the other ; the antennæ are pale brown, and the clubs are black beneath. On the under surface the colour of primaries is different, and there is an additional ocellus towards outer angle ; the markings are more distinctly defined on the secondaries.

The specimen of *E. (C.) delavayi* from Yunnan, figured by M. Oberthür, is rather larger than my specimens, but it does not present any other differences of importance.



Apparently a scarce species. I have four specimens from Ta-chien-lu and two from Wa-shan; all were taken in July. All of these are of the male sex; my collectors failed to meet with a female of the species.

**Erebia rurigena.** (Plate IX. fig. 3, ♂.)

*Erebia rurigena*, Leech, Entomologist, xxiii. p. 187 (1890).

*Male.* Dark brown, with a slight yellowish tinge in certain lights. Primaries have a blackish cloud-like fascia from the inner margin to the centre of the wing; the ocellus towards apex is large, conspicuously ringed with pale fulvous, and the lower of the two white pupils is very faint or entirely absent. Under surface brown, dusted with ochreous along costal half of primaries; the ocellus is brighter than above, both pupils are well-defined, and it is followed by a reddish-brown cloud extending nearly to first median nervule: secondaries ochreous grey, clouded and dusted with darker scales, and traversed by a number of wavy brown lines, the most distinct of which are the two central and the submarginal; preceding the submarginal line is a series of white points. Fringes pale grey-brown.

*Female.* Paler in colour, the iris of apical ocellus is brighter, and the white pupils are larger; the ocellus is placed in the upper portion of a pear-shaped patch, which is paler than the rest of the wing.

Expanse, ♂ 56–62 millim., ♀ 56–60 millim.

Allied to *E. ruricola*, Leech, but distinguished at once by the fulvous ring to ocellus. Two male specimens from Moupin have the ocellus only half the usual size. In a few examples there is no trace of white points before submarginal line on under surface of secondaries; in others the central lines assume band-like proportions, and the submarginal line is not clearly defined.

Rather a local species. I have specimens from Ta-chien-lu, Wa-shan, and Moupin. It flies in July.

Genus CALLEREBIA.

*Callerebia*, Butler, Ann. & Mag. Nat. Hist. (3) xx. p. 217 (1867).

“Very similar to *Erebia*; differs in the form and markings of the wings, the anal angle of the *hind wing* being frequently produced and lobe-shaped; also in the more slender antennæ less distinctly clavate, and in the more angulate palpi. Otherwise as in *Erebia*.” (*Butler, l. c.*)

**Callerebia phyllis.** (Plate IX. fig. 9.)

*Callerebia phyllis*, Leech, Entomologist, xxiv., Suppl. p. 57 (June 1st, 1891).

*Male.* Allied to *C. pratorum*, Oberth., but the apical ocellus is oval and oblique, the white pupils are also placed obliquely, the lower one being nearer to the outer margin; on the secondaries there is no anal ocellus: on the under surface the costa and outer margin of primaries are bordered with slaty grey; the secondaries are of the same colour, with a darker central band,

which is serrated on its outer edge, and clouded externally with light brownish; there are no ocelli, but a submarginal series of small whitish dots.

Expanse 55 millim.

Two specimens, taken by a native collector at How-kow at a great elevation.

Since the above description appeared M. Oberthür has published the fifteenth part of his 'Etudes,' in which he describes *C. yphtimoides* (p. 14, pl. ii. fig. 16) from Tse-kou. This appears only to differ from *C. phyllis* in the paler coloration of the under surface of secondaries and in a few other minor characters.

### **Callerebia albipuncta.** (Plate IX. figs. 5 ♂, 6 ♀.)

*Callerebia albipuncta*, Leech, Entomologist, xxiii. p. 31 (1890).

*Male.* Primaries blackish brown, outer third paler, towards apex is a large round black patch, enclosing two small white spots encircled with pale fulvous; below is a brighter fulvous cloud. Secondaries blackish brown, paler along abdominal margin; towards anal angle is a fulvous-ringed black spot, enclosing a white dot; fringes tinged with grey. Under surface of primaries red-brown, apex and upper half of outer margin greyish; bipupillated ocellus as above; secondaries dark brown, traversed by innumerable irregular wavy lines; ocellus towards anal angle as above, and there is a white spot in each nervular interspace between it and the costa. Expanse 54-60 millim.

*Female.* Discal area of primaries suffused with reddish, otherwise similar to male.

Allied to *C. sylvicola*, Oberth., and *C. pratorum*, Oberth. (Etud. d'Ent. xi.), but most closely to the last named; from both species it may, however, be separated by the series of white spots on under surface of secondaries.

Several male specimens taken at Chang-yang in July, and a number of both sexes from Ichang Gorge, taken in August. I have also received a specimen from the Province of Kwei-chow, Western China.

This species is fairly constant in the character of marking, but two female examples have the white submarginal spots reproduced on the upper surface of secondaries. One of these specimens has the black patch on primaries pear-shaped, enclosing three white spots, and there is a small ocellus below it, near the outer angle.

### **Callerebia pratorum.**

*Callerebia pratorum*, Oberthür, Etud. d'Entom. xi. p. 25, pl. iv. fig. 26 (1886).

*Male.* Similar in colour to *C. oriva*, but much smaller, and the wings, especially the secondaries, are rounder. The primaries have an oval bipupillated subapical ocellus, beneath the fulvous

iris of which is a patch or short transverse band of rather paler fulvous. The secondaries have a complete ocellus between the first and second median nervules, and there is often a reddish spot on the interspace above. Under surface of primaries bright fulvous, costa and outer margin grey-brown, apex freckled with whitish; ocellus as on upper surface, but iris is yellowish; secondaries are pale grey, the basal two thirds, limited by an indented brown line, is marked with numerous short brown striæ and indications of an interior transverse line; the submarginal area is clouded and striated with brown, and has a series of indistinct white points.

*Female.* Paler; ocellus of primaries as in male, but larger and with a reddish flush from the inner edge of iris towards base of the wing. Under surface of primaries as in the male, but the secondaries are paler and traversed by two brown central lines, enclosing a darker space. Expanse, ♂ 56–60 millim., ♀ 55–60 millim.

Common and generally distributed in Western China. It occurs in June, July, and August, and is found up to 10,000 feet.

### **Callerebia sylvicola.**

*Callerebia sylvicola*, Oberthür, *Etud. d'Entom.* xi. p. 24, pl. iv. fig. 25 (1886).

Blackish brown. Primaries have a large oval subapical ocellus, with two bluish-white pupils and a dull fulvous iris. Secondaries have a broad dull fulvous band on submarginal area, enclosing four black spots with bluish-white centres. Under surface of primaries reddish brown, with dark grey-brown margins; two blackish transverse lines on outer margin, the outermost preceded and followed by greyish; secondaries grey, clouded and heavily freckled with brownish; the basal two thirds slightly darker and limited by a blackish, wavy, curved line; there are five complete submarginal ocelli, and the irides of these, as also of the ocellus on primaries, are yellowish buff; a wavy, curved, blackish line edged outwardly with greyish before the outer margin.

Expanse 62 millim.

I have only two examples of this species; one of these has an additional white spot surrounded with dull fulvous placed at the costal end of the fulvous band of secondaries; in the other specimen there is a small additional ocellus towards anal angle on under surface of secondaries.

This species was taken by Mr. Pratt at Chia-ting-fu, Western China, in July.

M. Oberthür says that the type of *C. sylvicola* was taken at Châpa.

### **Callerebia orixa.** (Plate XII. fig. 7, var.)

*Callerebia orixa*, Moore, *Proc. Zool. Soc. Lond.* 1872, p. 555; Marshall & de Nicéville, *Butt. Ind.* i. p. 245 (1882).

*Erebia polyphemus*, Oberthür, *Etud. d'Entom.* ii. p. 33, pl. ii. fig. 2 (1876).

“*Male*: Upperside dark chocolate velvety-brown, with an indistinct narrow submarginal black line. Fore wing with a large subapical ocellus, composed of a round black spot, encircled by

a broad bright ferruginous ring, and centred with two white dots. Hind wing with a small similar ocellus near the anal angle. Underside brighter brown. Fore wing mottled at the apex, the ocellus as above, with a posterior dusky border. Hind wing with numerous greyish-white, transverse, short strigæ, which are most numerous from the abdominal margin and less frequent before and below the apex; two very small contiguous anal black spots encircled by a ferruginous ring, each without a central white dot." (*Moore, l. c.*)

The Chinese specimens of the type-form have the wings rather more fuliginous in colour; the iris of apical ocellus of primaries is broader and deeper fulvous. The under surface of the secondaries of Chinese and also Indian examples I should describe as whitish, with numerous short, transverse, brown striæ, less numerous on the abdominal and submarginal areas; there is a fairly distinct, angulated, narrow, brown central band, and sometimes there are indications of another brown band nearer the base; the ocelli towards anal angle are generally obsolete.

Expanse ♂ 63-66 millim.

Var. **polyphemus**, Oberthür. (Plate XII. fig. 7, ♂.) *Male*. The ocellus of primaries and that towards anal angle of secondaries much larger; the pupils of the apical one are tinged with bluish and more conspicuous, and the iris is often very broadly diffused on its outer and lower edges, the latter especially so. On the under surface the primaries are generally less mottled at the apex: the secondaries are whiter and less striated, the central brown band is broader, and the interior one often distinctly defined; the outer margin is clouded with brown, and there is generally a large cloud of this colour on the costal portion of the submarginal area; usually there are two well-formed ocelli towards anal angle.

*Female*. Paler than the male; iris of the apical ocellus of primaries is pale fulvous, and its lower edge expands nearly to the iris of a second ocellus placed between the first and second median nervules; there is generally a black spot in this expansion of the iris, which is often pupilled with white; sometimes this intermediate spot is united with the black spot of apical ocellus. On the secondaries there are always two ocelli near anal angle, and often a more or less complete ocellus is placed between the second and third median nervules. The under surface of primaries is greyish brown: secondaries tinged with ochreous, especially on the submarginal area; the transverse brown lines are very distinct.

Expanse, ♂ 70-80 millim., ♀ 74-86 millim.

One male example from Wa-ssu-kow has a second ocellus on primaries, as in the female, and the pupils of apical ocellus are outwardly dilated: the ocellus of secondaries has a large pupil, but the iris is very dull in colour; there is a second ocellus nearer the anal angle, but this is not well defined. Another specimen from the same locality has three ocelli on primaries as in the female, and a large black spot on the secondaries between the usual ocellus and anal angle. A second ocellus on primaries is also seen in two specimens from Wa-shan and one from Huang-mu-chang; the last has a minute black dot in the dilated lower portion of the iris of apical ocellus.

On the under surface of secondaries the brown striæ sometimes unite and form short bands on the costal portion of central area. In one specimen from

Kwei-chow the whole of the secondaries, excepting the abdominal and sub-marginal areas, is deeply suffused with brown, the transverse bands being reddish brown. The first male specimen referred to from Wa-ssu-kow has an extra ocellus on the under surface placed just above the third median nervule. Many examples have no trace of an ocellus on the under surface of secondaries, and such an example is figured by M. Oberthür.

Occurs at Chang-yang in Central China, and is generally distributed and common in Western China.

### Genus MELANITIS.

*Melanitis*, Fabricius, Illiger, Mag. vi. p. 282 (1807).

*Hipio*, Hübner, Verz. bek. Schmett. p. 56 (1816).

*Cyllo*, Boisd. Voy. Astr., Lep. p. 140 (1832); Westwood, Gen. Diurn. Lep. p. 360 (1851).

“**BODY** small, weak. Wings large; fore wings emarginate along the apical margin; hind wings angulated or tailed in the middle of the outer margin.

“**HEAD** moderate sized, hairy, with a broad short tuft in front.

“*Eyes* prominent, naked.

“*Labial palpi* rather short, compressed, broad, obliquely porrected upwards, the tip not reaching to the level of the top of the eyes; thickly clothed with short scaly hairs lying close together; the back of the middle joint with a tuft of thick hairs extending from the middle to the tip.

“*Antennæ* of variable length, slender; terminated by a gradually formed elongate club, scarcely thicker than the rest of the antenna.

“**THORAX** rather short, compressed, elevated in its hinder portion.

“*Fore wings* subtriangular. Fore margin strongly arched; apical angle rounded. Apical margin angulated, or rather dilated, a little below the apex, below which the margin is emarginate. Inner margin nearly straight. None of the veins dilated at the base. Costal vein extending a little beyond the middle of the costa. Postcostal vein with its branches arranged as in *Debis*. Upper discocellular vein very short, oblique, arising near the middle of the wing. Middle discocellular vein equally short, more transverse; outer discocellular long, much curved, the curve being towards the base of the wing, the extremity directed outwards and uniting with the third branch of the median vein at about the same distance from its base as exists between the origin of its first and second branches; the third branch angulated at the place of junction with the outer discocellular, beyond which it is nearly straight.

“*Hind wings* broadly subovate; outer angle rounded. Outer margin scalloped, strongly angulated, or tailed, in the middle, at the extremity of the third branch of the median vein. Precostal vein nearly straight. Costal vein extending nearly to the outer angle. Postcostal vein branching at a moderate distance from the base (which is rather nearer the body than the precostal vein). Upper discocellular vein short, curved; lower discocellular considerably

longer, nearly straight, oblique; uniting with the third branch of the median vein at a short distance beyond its origin, closing the discoidal cell in an acute point.

“*Fore legs* very minute, clothed with short hairs, not forming a brush. The tibia nearly equal in length to the femur. Tarsus about two thirds of the length of the tibia. *Fore legs* of the female rather longer, scaly. The femur clothed with short hairs beneath. Tibia and tarsus of nearly equal thickness throughout; the latter obliquely truncate at the tip, with a few minute spines visible at or near the tip beneath, indicating the articulations.

“*Four hind legs* of moderate length, slender, scaly. Tibiæ with a very few very slender spines beneath. Tibial spurs small. Tarsus with the articulations very distinct, armed beneath and at the tips with rather long fine spines. Ungues curved, acute, armed beneath near the tip with a distinct acute tooth, nearly equal in size to the apical tooth of the claw.

“**ABDOMEN** small, or but moderately robust.” (*Westwood, l. c.*)

### **Melanitis leda.** (Plate XIII. figs. 2 ♀, 5 ♂, var. *ismene*.)

*Papilio leda*, Linnæus, Syst. Nat. i. pt. ii. p. 773 (1767).

*Melanitis leda*, Fabricius, Ill. Mag. vi. p. 282 (1807); Moore, Lep. Ceyl. i. p. 15, pl. x. figs. 1, 1 *b* (male), 1 *a* (female) (1880); Distant, Rhop. Malay. p. 41, pl. iv. fig. 10 (1882); Marshall & de Nicéville, Butt. Ind. i. p. 252 (1882); Pryer, Rhop. Nihonica, p. 30, pl. viii. fig. 8.

*Hipparchia leda*, Horsfield, Cat. Lep. E. I. C. pl. viii. figs. 9 (larva), 9 *a* (pupa); 9 *b*–9 *h* (structure of imago) (1829).

*Cyllo leda*, Butler, Ann. & Mag. Nat. Hist. (3) xix. p. 51 (1867); Hewitson, Journ. Linn. Soc. Lond., Zool. viii. p. 144 (1864).

*Melanitis leda et ismene*, de Nicéville, Journ. Asiatic Soc. Beng. 1886, p. 237, pl. xii. fig. 4, *larva*.

*Papilio ismene*, Cramer, Pap. Exot. i. pl. xxvi. figs. A, B (1775).

*Melanitis ismene*, Moore, Lep. Ceyl. i. p. 14, pl. x. figs. 2, 2 *a* (male), 2 *b* (larva and pupa) (1880); Distant, Rhop. Malay. p. 42, pl. iv. figs. 9 & 12 (male), 11 (female) (1882); Marshall & de Nicéville, Butt. Ind. i. p. 256, pl. xii. fig. 28, ♂; Pryer, Rhop. Nihonica, p. 30, pl. viii. fig. 7.

“*Male and female*. Upperside uniform, somewhat pale brown. Fore wing with two rounded black spots, the lower the larger, confluent and placed midway between the end of the cell and the outer margin, one on either side of the third median nervule. The lower spot is centred with pure white; the upper one has a somewhat larger white spot on its outer margin. The black spots are very obscurely more or less surrounded with ferruginous, and there is a very diffused black patch between the upper one and the costa, and another similar patch internal to it, extending into the end of the cell, these two patches being divided by a very obscure ferruginous bar. Hind wing with a series of submarginal ocelli varying in number and distinctness coincident with the ocelli on the underside, black with white pupils and ochreous irides. Underside much paler, uniformly striated throughout with darker brown. Fore wing with from three to five submarginal ocelli, the one between the upper median nervules always the largest and further removed from the margin. Hind wing with six more or less distinct ocelli, the

upper one the largest, the remainder gradually increasing to the fifth, which is nearly as large as the first; the sixth at the anal angle smaller, often bipupillated, sometimes geminate; all the ocelli on both wings black with white (sometimes irrorated with blue) pupils, yellow irides, and dark brown outer ring.

“Typically there are no fasciæ on the underside, but in some cases the striæ coalesce into dark bands from the costa of the fore wing, the first reaching the outer angle, the second continued as a discal band across both wings, and with other abbreviated and less distinct bands between.” (*Marshall & de Nicéville, op. cit. p. 252.*)

I have specimens of the type form from Omei-shan, Kwei-chow, Chia-ting-fu, Wa-shan, and Chia-kou-ho, in Western China; from Ichang in Central China; and from Gensan, Corea.

Except that the ocelli on upper surface are not always coincident with those of under surface, they agree exactly with the description of *M. leda* quoted above.

One small example from the Isle of Kiushiu is of the type form below; but the primaries are not in the least falcate, and the angulation of the secondaries is not produced. On the upper surface the ocelli are obsolete on secondaries, and the lower one only remains on the primaries; but there is no trace of ferruginous marking.

**Var. ismene**, Cramer. “*Male and female.* Upperside uniform rather dark brown. Fore wing with a large black spot, pupilled with white, placed between the second and third median nervules, with another somewhat elongated black spot in the interspace above it, also with a white spot, but placed upon or near to its exterior margin; sometimes with a third indistinct suffused spot below the second median nervule. These spots are inwardly and beneath, below the second median nervule, bordered with bright ferruginous; there is also a somewhat square patch of this colour above the uppermost black spot. In some specimens there is a suffused black patch merging into the dark ground-colour on either side of the subapical squarish ferruginous patch. Hind wing usually with one or two submarginal black spots with white centres near the anal angle; these vary much in size, as also in number, and in some specimens are entirely wanting. The costa near the apex of the fore wing and the outer margin of both wings is in some specimens paler, thickly sprinkled with darker atoms, showing in this respect an approach to *M. duryodana* [Feld. Reise Nov., Lep. iii. p. 464]. Underside extremely variable. The ground-colour in some specimens is very pale buff-brown, in others ferruginous, in some grey, and again in others almost black, with innumerable shades between all these colours. In most specimens there is a dark discal band common to both wings, with another similar band, but straighter, across the fore wing about midway between the first band and the apex. Many specimens are covered with irregular black or dark brown spots and blotches resembling fungi on dead leaves; some specimens have one or two white spots on the fore wing, and a submarginal series of six more or less perfect ocelli on the hind wing, these latter being more usually represented merely by whitish spots, and are always more or less blurred. In all the specimens we have seen, the fore wing is more or less falcate (sometimes

almost truncate) at apex, and the hind wing is caudate. The female is somewhat paler, and the ferruginous markings are rather more diffused." (*Marshall & de Nicéville, Butt. Ind. i. pp. 256, 257.*)

I have specimens from Omei-shan, Wa-shan, and Chia-kou-ho in Western China, and also from the Loochoo Islands which are referable to the above form.

M. de Nicéville has bred both *ismene* and *leda* from a batch of ova deposited by *M. leda*. He says the eggs were laid in August, and that he "bred, on September 6th, a female *M. leda*; on the 7th another female; on the 8th two female *M. ismene*, one with distinct ocelli, and therefore an intergrade between *M. leda* and *M. ismene*, though nearer the latter; on September 9th one male and two females of *M. ismene*; on September 10th three males and four females of *M. ismene*, several of which are intergrades, and one male *M. leda*; on September 11th two males and one female (the latter a highly-ocellated specimen) of *M. ismene*; and on September 12th one male of *M. ismene*: the total result being that from nineteen pupæ bred from eggs laid by true *M. leda* I obtained three specimens (1 ♂, 2 ♀) like the mother, and sixteen specimens (7 ♂, 9 ♀) of *M. ismene*, several of which, though transitional forms, were yet all nearer to *M. ismene* than to *M. leda* (*J. A. S. B. 1886, p. 237.*)"

The late Mr. H. Pryer says that *M. leda* is very rare in Japan. He appears to have seen only two specimens; these were flying among cultivated hemp on the borders of Tosa and Iyo in Shikoku, and with some difficulty he managed to secure one of them. Mr. Maries records the species from Nikko. It occurs in Japan in the months of July and August. Var. *ismene*, which is also a scarce insect in Japan, occurs in October according to Mr. Pryer, who, referring to it, says:—"I saw only two specimens in Yamato, both of which I captured. They were flying round the bole of a *Cryptomeria* growing on the mountain-pass leading up to Odaisan."

### **Melanitis aswa.**

*Cyllo aswa*, Moore, Proc. Zool. Soc. Lond. 1865, p. 769.

*Cyllo tristis*, Felder, Reise Novara, Lep. iii. p. 464 (1867).

*Melanitis suyudana*, Moore, Horsfield & Moore, Cat. Lep. E. I. C. i. p. 224 (1857).

*Melanitis aswa*, Marshall & de Nicéville, Butt. Ind. i. p. 253 (1882).

*Melanitis aswa*, var. *tristis*, Marshall & de Nicéville, *l. c.* pl. xii. fig. 27, ♂.

"Male. Upperside uniform dark brown, without spots or other markings. Underside brown.



uniformly covered with short grey striæ. Fore wing with four or five more or less defined apical ocelli, each composed of a black spot, white pupil, ferruginous iris, and dark brown outer circle; a marginal band ferruginous-brown. Hind wing with a transverse discal line and broad marginal band ferruginous-brown; a submarginal series of six well-defined ocelli, each composed of a black spot, white pupil, ferruginous iris, and dark brown outer circle." (*Moore, l. c.*)

*Female.* Much paler; primaries strongly falcate, and angulation of secondaries produced. Primaries have two black spots with white centres as in *M. leda*, but not edged internally with ferruginous; the apical area is paler and tinged on the margin with ferruginous, and there is a fuscous patch above, and partly within, the outer portion of discoidal cell. The secondaries have from one to three small ocelli with distinct white pupils on the lower half of the submarginal area. The under surface is pale brown tinged with ochreous or ferruginous brown, strongly so on basal areas; bands broad and rusty brown in colour, as also are the outer margins of all the wings; ocelli small, often minute, sometimes entirely absent on primaries.

Var. **tristis**, Felder. "*Male.* Upperside obscure fuscous, paler at the margins. Underside: both wings obscure ferruginous-swarthy, densely and finely variegated with white. Fore wing with fine minute ocelli, arranged as in *leda*. Hind wing with an obsolete ferruginous discal streak, subangulate externally, with six ocelli much smaller than in *leda*. The form of the wings differs proportionally from all the examples of *leda* from many localities now before us. The fore wing is longer in the inner margin; the hind wing likewise is broader, but shorter within than in *leda*." (*Marshall & de Nicéville, l. c.*)

The female of *M. aswa*, which is here described, is perhaps the so-called form of *M. leda* referred to by Marshall and de Nicéville as var. *a* (Butt. Ind. i. p. 253) as follows:—"This variety has been found in Kulu in the N.W. Himalayas, in Burma, at Poona in the Deccan, and at Trevandrum in Travancore. It is distinctly intermediate between *M. leda* and some varieties of *M. aswa*, not only in the style of the fasciæ and marginal band, and in the less distinct and prominent ocellation, but also in outline, for it has the costa more strongly arched and the fore wing consequently broader than in *M. leda*, but never so much so as in *M. aswa*, and this and its paler coloration will always serve to distinguish it from *M. aswa* in any of its forms. It appears to be a fairly constant form." (*Marshall and de Nicéville, l. c.*)

I have received specimens of the female of *M. aswa* from Captain Young which were taken at Sultanpore, Kulu, and these are identical with examples of this sex of the species from Western China. The males are mostly of the *tristis* form, but there are also specimens agreeing fairly well with the type, and others with *suyudana*. The differences between these named forms are really very unimportant, and sink into insignificance when we regard the more

distinct-looking varieties *leda* and *ismene*, which are now known to be only forms of one species. The sexes are pretty constant as regards their respective coloration and outline of the wings. The only characters which are subject to variation are the black subapical spots of primaries; these, together with the white spots placed in them, are, as a rule, well defined in the female, but often entirely absent in the male. On the secondaries of the female there is always one white submarginal spot encircled with black, more or less distinctly, near anal angle; sometimes this sex has one or two other white spots on the submarginal area. In the male there is rarely any white spot on the secondaries. On the under surface of both sexes there is some slight difference in tint of ground and amount of striation; the ocelli also exhibit some variation as regards number and definition.

This species occurs in June and July at Omei-shan, Chia-kou-ho, and Wai-shan, also in India, Burma, and Ceylon.

### Subfamily MORPHINÆ.

#### Genus ENISPE.

*Enispe* (E. Doubleday, MS.), Westwood, Gen. Diurn. Lep. p. 292 (1850).

“BODY robust. Wings large, subtriangular, marked above with submarginal rows of lunules, and the hind ones beneath with two minute distant ocelli.

“HEAD moderate, slightly tufted in front.

“Eyes large, prominent, naked.

“Labial palpi scaly, directed upwards, and reaching a little higher than the top of the eyes, advanced but a very short distance in front of the face. Terminal joint minute, oval, nearly upright; middle joint hairy on the back beyond the middle.

“Antennæ half the length of the fore wings, slender; with an elongated slender club, occupying about one fifth of the antennæ, slightly bent outwards at the tip, with two fine longitudinal grooves beneath.

“THORAX woolly, robust.

“Fore wings large, subtriangular. Fore margin very much arched; apical angle acute. Outer margin straight, a little more than two thirds the length of the anterior. Inner margin nearly straight, scarcely longer than the outer. Costal vein strong. Postcostal with the first branch arising before the anterior extremity of the discoidal cell, and running into the costal vein before the junction of the latter with the costa; second branch obliterated; third and fourth branches arising close together at about five sixths of the length of the wing. Upper discocellular vein very short and oblique; middle discocellular obliterated; the upper and lower discoidal veins arising together at the junction of the upper and lower discocellular veins; the latter considerably arched, very oblique, and united to the third

branch of the median vein at the same distance from its base as exists between the base of the second and third branches of the median, closing the discoidal cell at an acute angle; its anterior extremity extending to two fifths of the length of the wing.

“*Hind wings* subtriangular. The costal margin much arched. The outer margin slightly scalloped. Precostal vein upright, its extremity bent slightly towards the body. Subcostal vein branching near its base. Upper discocellular forming the slightly curved base of the discoidal vein, and arising at a short distance from the base of the subcostal branch; lower discocellular wanting, so that the narrow discoidal cell is open at the extremity. Median vein robust, branching much lower in the wing than the branches of the subcostal vein.

“*Fore legs* of the male minute, pectoral, moderately feathered. The tibia shorter than the femur, and the tarsus nearly equal to the tibia in length, exarticulate, and destitute of apical ungues.

“*Four hind legs* strong. Tibiæ and tarsi armed beneath with rows of minute spines. Middle pair of legs longer than the hind ones. Ungues rather large, sickle-shaped, and very acute.

“**ABDOMEN** moderately robust.” (*Westwood, l. c.*)

### **Enispe lunatus.** (Plate I. figs. 1 ♀, 2 ♂.)

*Enispe lunatus*, Leech, *Entomologist*, xxiv., Suppl. p. 26 (1891).

*Male.* Allied to *Enispe euthymius*, Doubleday, *Ann. & Mag. Nat. Hist.* xvi, p. 179 (1845), but the anal angle is less acuminate, the cell of primaries is not closed by a black bar, and the black discal spot is linear, curved, and sometimes bifurcate; the submarginal black line is formed of a series of curves instead of angles as in *E. euthymius*, and is preceded by a few sagittate marks placed on the nervules. On the secondaries the only markings are two submarginal lines, the first lunulated, the second serrated. The under surface is pale yellowish brown, with some faint dusky mottling on the outer third of all the wings; two angulated subbasal lines, central bar, and interrupted submarginal line on primaries, dark brown: on the secondaries the brown subbasal line is wavy to the median nervure and angulated before submedian, the central line is deep brown; there is a large black spot, surrounded with brown in the first cellular interspace, and a similar spot with a white central dot in the first median interspace; submarginal line as on primaries.

*Female.* Similar to male, but the costal area of primaries from cell to apex is white, and irregular bands of the same colour precede and follow the submarginal line; the central transverse markings on all the wings are similar in character to those of the same sex of *E. euthymius*.

Expanse, ♂ 84 millim., ♀ 96 millim.

Very common at Omei-shan in June and at Moupin in July. The species does not appear to occur in Central China.

## Genus CLEROME.

*Clerome*, Westwood, Gen. Diurn. Lep. p. 333 (1851).

“BODY moderately robust. Wings large, plainly coloured, with a row of small spots beneath the middle and the outer margin on the under surface.

“HEAD rather broad.

“*Antennæ* long (two thirds the length of the fore wings), nearly straight, composed of rather long joints; terminated by a long, but very slender, scarcely distinct club formed of short joints.

“*Labial palpi* compressed, ascending obliquely to about the height of two thirds of the eye, porrected in front nearly to the length of the head, not convergent, scaly. Middle joint clothed behind with hairs applied to the face.

“THORAX oval, very hairy.

“*Fore wings* large, oval-triangular. Fore margin very much arched; apical angle rounded. Apical margin about two thirds of the length of the fore margin, entire, slightly convex; inner angle rounded. Inner margin rather longer than the apical, slightly dilated at the base in the male. Costal vein extending to about two thirds of the length of the costa. Postcostal vein with its first branch arising at about two sevenths of the length of the wing; second branch arising at about three fifths of the length of the wing; third and fourth arising at short distances beyond the second; all these branches free, the fourth extending to the tip of the wing. Upper discocellular vein very short, arising nearly at one third of the length of the wing; middle discocellular equally short, nearly transverse; outer discocellular very long and curved, somewhat like the letter *o*, the extremity reaching nearly to the middle of the wing, where it joins the third branch of the median vein at a short distance beyond its base, terminating the closed discoidal cell nearly in a point.

“*Hind wings* broadly ovate. Fore margin scarcely curved. Outer margin rounded; anal angle rounded. The disc above, near the extremity of the thorax, is furnished with a tuft of fine hairs in the male. Precostal vein short, curved towards the body. Costal vein extending to about two thirds of the length of the costa. Postcostal vein with its branches arising quite close to the base of the wing, the outer branch extending to the outer angle. Discoidal cell very narrow and open. Median vein with its branches wide apart.

“*Fore legs* of the male very small and brush-like, very woolly. *Fore legs* of the female longer than those of the male, slender, scaly. Tarsus not half the length of the tibia; articulations indistinct, except when denuded of scales; obliquely truncate at the tip; armed with very small spines.

“*Four hind legs* long, strong, scarcely spined beneath. Tibial spurs minute.

“ABDOMEN rather small and slender.” (*Westwood, l. c.*)

### *Clerome ærope*. (Plate I. fig. 4, ♂.)

*Clerome ærope*, Lecch, Entomologist, xxiii. p. 31 (1890).

*Male*. Drab-brown. Primaries darker towards the outer margin; a conspicuous tuft of fulvous silky hairs on the interior edge of the median nerve near the base. Under surface brown; primaries paler along the inner margin, with a triangular vitreous patch below the median

nerve; all the wings traversed by three dark reddish-brown lines, terminating at the submedian nervure; there are six small yellow spots on the primaries before the submarginal line, that nearest the costa punctiform, sometimes absent; on the secondaries there is a transverse series of five similar spots, the first is near the central line, the fourth and fifth approximate more to the submarginal, whilst the second and third are equidistant from either line. Fringes on both surfaces grey-brown, preceded by a slender brownish line.

*Female.* Colour of male; outer margin of primaries with a suffused blackish border, broad on costa and tapering towards outer angle; external margin of secondaries is also suffused with blackish. The vitreous patch and tuft of hairs are characters pertaining to the male only. Expanse, ♂ 78–89 millim., ♀ 84–100 millim.

This species is closely allied to *C. assama*, Westw., from Assam and the Khasi Hills; but it is decidedly paler in colour above, whilst beneath the spots are much smaller; the transverse lines are differently curved, and there is no disposition of the second to unite with the third above anal angle.

Occurs at Ichang and Chang-yang in Central China, and at Moupin, Wanshan, Chia-kou-ho, and Omei-shan in Western China. It flies in July.

### Genus STICHOPHTHALMA.

*Stichophthalma*, Felder, Wien. ent. Mon. vi. p. 27 (1862).

*Thaumantis*, Westwood, Gen. Diurn. Lep. ii. p. 335 (1851), in part.

“*Δ Thaumanthide*, Hübn., capite minore, antennis brevioribus, palpis multo longioribus, pro sexu diversis, vena subcostali alarum anticarum quadriramosa, ramis omnibus liberis, vena discoidali superiore earum a ramis subcostalibus magis remota, quam ab inferiore, vena discocellulari inferiore in medio valde curvata, trunco superiore venarum in alis posticis magis deflexo, ramo mediano ultimo earum haud geniculato venaque interna inferiore brevior et magis torta optime dignosci potest.

“Tres continet species valde similes. Omnes ocellis pluribus seriatis in pagina inferiore ornatæ sunt.” (*Felder, l. c.*)

### **Stichophthalma howqua.** (Plate I. fig. 3, var. ♀.)

*Thaumantis howqua*, Westwood, Trans. Ent. Soc. Lond. 1851, p. 174; vol. iv. p. 178, pl. 18. figs. 2, 2 a (1858).

*Stichophthalma howqua*, Felder, Wien. ent. Mon. vi. p. 28 (1862).

“*T. alis supra fulvis, omnibus serie subapicali lunularum nigrarum valde curvatarum; maculis hastiformibus nigris, in alis posticis majoribus, antice adjectis; alis infra luteo-fulvis, strigis duabus obliquis irregulariter sinuatis, 1<sup>ma</sup> ante et 2<sup>nda</sup> pone medium alarum anticarum, illa ante et hac per medium posticarum, extensis, externa e costa fere ad angulum analem ducta ubi recurvat; nubila recta obliqua fusca submedia ad angulum analem extensa, macula grisea terminata; alis anticis ocellis tribus, posticis quinque rufis, pupilla alba iride tenui nigra strigisque duabus parallelis vix angulatis prope marginem apicalem. (Mas.) Expans. alar. antic. unc. 5.” (*Westwood, l. c.*)*

Var. **suffusa**, var. nov. (Plate I. fig. 3, ♀.) Basal half of primaries and the greater portion of secondaries suffused with reddish brown; the sagittate marks on outer margin of secondaries united, forming a broad black marginal band.

This form only occurs in Western China, the specimens from Central China are of the typical form, but one example from Ichang has a distinct ocellus on the upper surface of the secondaries, placed between the first and second median nervules.

Common in Central China at Ichang, also at Wa-shan, Chia-kou-ho, Kweichow, and Omei-shan in Western China. The type, which is in the National Museum at South Kensington, is from Shanghai (? Snowy Valley, Ningpo).

### **Stichophthalma neumogeni**, sp. n. (Plate I. fig. 5, ♂.)

*Male*. Similar to *S. howqua* on the upper surface, but much smaller. On the under surface of secondaries there are two blackish marks in the discoidal cell; the transverse central lines of all the wings are rather differently shaped; the submarginal lines are closely dentate; the marginal shade-like lines are wavy, with projecting teeth on each nervule; the third and fourth ocelli of primaries and the second and fourth ocelli of secondaries are absent, and the remainder on both wings, with the exception of the fifth of secondaries, indistinct.

Expanse 95 millim.

*Hab.* Western China, ? Omei-shan.

I am indebted to Mr. Neumogen, of New York, for the loan of a specimen of this new *Stichophthalma*.

## Subfamily ACRÆINÆ.

### Genus PAREBA.

*Acræa*, section v. *Pareba*, Doubleday, Gen. Diurn. Lep. p. 142 (1848).

“Labial palpi small, the second joint but little swollen, scaly, and hairy. First subcostal nervule of the anterior wings thrown off at the end of the cell. Discoidal nervure of the posterior wings thrown off from the subcostal nervure considerably before it divides.” (*Doubleday, l. c.*)

### **Pareba vesta.**

*Papilio vesta*, Fabricius, Mant. Ins. ii. p. 14 (1787); Donovan, Ins. China, pl. xxx. fig. 1 (1799).

*Acræa vesta*, Horsfield, Cat. Lep. E. I. C. pl. iii. fig. 21 (larva) (1829).

*Pareba vesta*, Marshall & de Nicéville, Butt. Ind. i. p. 318 (1882).

*Papilio terpsichore*, Cramer, Pap. Exot. iv. pl. cexcviii. figs. A-C (1780).

*Acræa anomala*, Kollar, Hügel's Kaschmir, iv. pt. ii. p. 425, pl. iii. figs. 3, 4 (1848).

Fulvous, venation black. Primaries have the costa black, and the outer margins of all the wings have a band of the same colour in which are placed a series of fulvous spots; there is a black irregular-shaped mark in the middle of the discoidal cell, and the discocellular nervules are sometimes broadly black; beyond the cell there is a black dash from the costa, which in some specimens extends to the third median nervule; the submedian and median interspaces each have a black spot. Secondaries frequently without any discal markings, but occasionally there are from two to four black spots beyond the cell, the higher number united and forming a short transverse band in some specimens. Under surface paler; primaries have a whitish patch between the cell and apex; outer marginal band whitish, limited internally by a zigzag black line. Secondaries, sometimes paler than primaries, have a whitish band on the outer margin, limited by a zigzag black line, and preceded by a broad fulvous band.

This species is an exceedingly variable one; at one end of the range of variation there are female specimens in which the primaries are black, with a few more or less indistinct yellowish spots, and the secondaries with a broad black band and a series of yellowish spots on outer margin. At the other end there are male specimens pale fulvous in colour, and with the costa and outer margin of primaries narrowly black; the neuration, with the exception of the subcostal nerve and its branches, which are usually black, is only slightly darker than ground-colour: secondaries have a black zigzag line before the outer margin.

Common in June and July at Moupin, Ta-chien-lu, Wa-shan, Pu-tsu-fong, Huang-mu-chang, province of Kwei-chow, and Western China, also at Chang-yang and Kiukiang in the same months.

The authors of 'Butterflies of India' (i. p. 319) say that *Pareba vesta* occurs locally throughout the Himalayas from the Chenab to Sikkim, and its range extends through the Khasi hills to Upper Burma. It has been taken in Chumba by Major C. H. T. Marshall. Captain Graham Young has sent me specimens from Kulu; and writing of the habits and life-history of the species (Proc. Zool. Soc. Lond. 1882, p. 243), Mr. Moore quotes the following note from that gentleman:—

“Larva feeds on the willow-leaved nettle (*Bohømeria salicifolia*). Imago, July to September. Eggs deposited in September, and hatch in about twenty days. Length of young larva three to four lines, entirely black. When about three weeks old they moult and then hibernate, reappearing in the following April. They moult again early in May, when they assume the red head. The larvæ generally feed on the upper branches of the plant, are

gregarious, and drop to the ground when disturbed. Third moult early in June, about the middle of which month they suspend themselves by the tail near the bottom of the stems of the bushes, and there change to the pupa state. The imago appears in about fifteen days, in the first or second week of July. A few come out in August and September, but not in sufficient numbers to constitute a succession of broods. The imago is seldom found far from the food-plant, which grows near running water.

“It is a very local insect, but, where occurring, abundant. It is to be found in wet ravines at from 3000 to 4000 feet elevation in Kulu. It is not a rapid flier, and is easily captured. When at rest it may be taken by the fingers. It is very constant in its appearance, frequenting the same localities year after year. The imago does not hibernate.”

#### Subfam. *NYMPHALINÆ*.

#### Genus *ISODEMA*.

*Paraplesia*, Felder, Wien. ent. Mon. vi. p. 26 (1862).

*Isodema*, Felder, Reise Novar. iii. pl. 54. figs. 1, 2 (1867).

“*Penthemæ*, Doubleday, Felder valde affine, hocce genus dignoscitur palporum articulo secundo capitis verticem haud æquante, vena discocellulari alarum anticarum superiore et intermedia æquilongis, alis, pedibus abdomineque brevioribus, alis anticis latioribus, apice haud productis cellulisque earum ideo brevioribus.” (*Felder, Wien. ent. Mon.*)

#### *Isodema adelma*.

*Paraplesia adelma*, Felder, Wien. ent. Mon. vi. p. 26 (1862).

*Isodema adelma*, Felder, Reise Nov., Lep. iii. pl. 54. figs. 1, 2 (1867).

“Alis fuscis, anticarum fascia discali maculis difformibus formata, costam versus bifida punctisque quinis grossis exterioribus, posticarum maculis submarginalibus aliisque marginalibus seriatis lunulatis, magnitudine decrescentibus albicantibus. ♂.” (*Felder, Wien. ent. Mon.*)

*Male*. Black. Primaries with a broad oblique cream-coloured macular band and a series of four spots of the same colour from the middle of costa; submarginal and marginal series of spots also cream-coloured, but the latter are very small and sometimes absent. Secondaries have three cream-coloured spots on the apical portion of the outer margin. Fringes cream-coloured, marked with black at the extremities of the nervules. Under surface fuliginous-brown; the markings of upper surface reproduced in white; the primaries have, in addition to the other markings, two small spots on the basal half of the cell; the secondaries have an interrupted creamy band and a series of white points on the central area; there is also a series of white points connected by an ill-defined white line on the outer margin.

The *female* differs only from the male in being larger and browner in colour.

Expanse, ♂ 100-106 millim., ♀ 106-114 millim.



Felder's type was from the Ningpo Hills. The species appears to be common in the province of Kwei-chow, and at Moupin and Omei-shan in Western China, and also at Ichang in Central China.

### Genus CALINAGA.

*Calinaga*, Moore, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 162 (1857);  
de Nicéville, Butt. Ind. ii. p. 142 (1886).

“HEAD small, with a somewhat long frontal tuft.

“*Antennæ* short, less than one third of the length of the fore wing, stout, with a gradual but rather prominent club, articulations distinct (*de Nicéville*).

“*Eyes* densely hairy (*de Nicéville*).

“*Labial palpi* porrected, ascending, elevated to the level of the middle of the eyes, slender, covered with fine hairs, those in front very long; apical joint ovate-cylindric.

“THORAX large, hairy; neck covered with long velvety hairs.

“*Fore wings* elongate-trigonal; anterior margin slightly arched, apical angle rounded; exterior margin about half the length of the anterior; posterior margin slightly convex, two thirds the length of anterior. Costal vein strong, and extending to two thirds of the anterior margin: subcostal vein separated from the costal, its first branch arising at two fifths from the base; second branch at a little distance off, and at equal distance from the first as from the extremity of discoidal cell, and both running parallel with the costal; third and fourth branches arising at equal distances from each other and from the extremity of the discoidal cell and the tip of the wing. Upper discocellular vein very short, almost obsolete, arising from the subcostal at about the middle of the wing; middle discocellular vein four times the length of first, extending downward, and slightly convex; lower discocellular vein long, curving obliquely downward and outward, and uniting with the third branch of the median vein at its origin, closing the discoidal cell.

“*Hind wings* elongate-trigonal; anterior margin convex at its base, then quite straight; outer margin rounded; abdominal margin nearly straight, slightly rounded; precostal vein rather indistinct, curved inward. Costal vein arched near the base, then straight, extending to costal margin on three fourths of the wing; subcostal vein straight to two fifths of the wing, where it branches slightly upward and extends to the apex. Upper discocellular vein short, straight, arising at the subcostal branch; middle discocellular vein slightly oblique, concave; lower discocellular vein oblique, convex, uniting with the third branch of median vein a little beyond its origin, closing the discoidal cell.

“*Fore legs* short, pectoral; femur clothed with fine long hairs; tibia and tarsus hairy; tarsus two thirds the length of tibia, armed with a single claw.

“*Hind legs* rather stout; femur clothed with hairs; tibia the same length as the femur, and partially covered with short spiny hairs, with two short tibial spurs; tarsus with several rows of shorter spines; of five joints, the first as long as the other four together; second, third, and fourth short; fifth rather long, half the length of the first; claws sharp.

“ABDOMEN long, slender.” (*Moore, l. c.*)

With regard to the proper position of *Calinaga*, de Nicéville observes (*l. c.*):—"Mr. Kirby in his Catalogue of 1871 placed it second in the Papilioninæ, but in his Supplement of 1877 placed it in the Nymphalinæ, in which subfamily it was originally described by Mr. Moore. M. Oberthür [Etud. d'Ent. vi. p. 11 (1881)] remarked that the characters furnished by the antennæ would indicate that the position of the genus lies between *Leuconea* (a genus of the subfamily Pierinæ, of which the European Black-veined White, *Aporia cratægi*, is the type) and *Parnassius*. Mr. Butler [Ann. & Mag. Nat. Hist. (5) xvi. p. 309 (1885)] has recently described a species from 'near Assam,' and has prefixed the following note regarding the genus, which, however, he retains in the subfamily Nymphalinæ, between the genera *Hestina* and *Ergolis*. 'The genus to which the following species (*C. brahma*) belongs has hitherto been placed in this part of the Nymphalinæ; I have, however, not the least doubt (in spite of its short thickened antennæ) that its proper place is in the Satyrinæ, between *Zethera* and *Orinoma*; the neuration of the wings is almost identical with that of the latter genus.' As the fore legs of *Calinaga* are completely pectoral and unfitted for walking, the proper position of the genus is among the Nymphalidæ, though a knowledge of its transformations is necessary for determining its exact position in that family."

There appear to be only two species in this genus, as *C. buddha*, Moore, and *C. brahma*, Butler, are probably forms of one species. These occur upon the southern and eastern slopes of the central plateau of Asia.

***Calinaga davidis*.** (Plate XX. fig. 1, ♂.)

*Calinaga davidis*, Oberthür, Etud. d'Entom. iv. p. 107 (1879).

*Calinaga buddha*, Oberthür, op. cit. vi. p. 11, pl. viii. fig. 6 (1881).

"Wings rounder than those of *C. buddha*, the pale portions of the wing are rather greenish than yellowish, and the white marginal spots are much reduced on the upper as well as on the under surface, the tint of the blackish markings is greyer with less brown in its composition and more transparent." (*Oberthür, l. c.*)

In addition to the characters indicated by M. Oberthür, as quoted above, the thorax of *C. davidis* is much less robust, and the reddish-brown hairs with which it is clothed in front are not nearly so bright as in *C. buddha*.

There are two forms of this Chinese *Calinaga*. One of these occurs at Moupin, Wa-ssu-kow, and Chow-pin-sa, Western China. Examples from the first-named locality agree almost exactly with Oberthür's figure, except that the dark colour is deeper in tone, almost black in fact, and agreeing in

this respect with Sikkim specimens of *C. buddha*, Moore\*. Specimens of this form from other localities have the whitish discal markings suffused with fuliginous.

The other form of *C. davidis*, which is common at Chang-yang, Central China, where it is the sole representative of the species, but also occurs sparingly in Western China, is greyish with the whitish markings well defined; the streaks and spots are often confluent, giving the appearance of a whitish insect with greyish marginal border and blackish venation.

In both forms the female has the outer margin of all the wings rounder than in the male, but agrees with that sex in colour and markings.

Oberthür states that his figure of *C. davidis* was taken from a very worn example; but if the darker portions of the wings were a shade heavier in tone the figure would then very well represent the form occurring in Western China, to which I have referred above.

### Genus CETHOSIA.

*Cethosia*, Fabricius, Illiger Magazin, vi. p. 280 (1807); Doubleday, Gen. Diurn. Lep. i. p. 130 (1848); de Nicéville, Butt. Ind. ii. p. 31 (1886).

“HEAD rather narrow, clothed with hair.

“*Eyes* oval, prominent.

“*Palpi* slightly divergent, ascending, rising considerably above the forehead, clothed with appressed scales; the first joint stout, curved; second joint more than five times the length of the first, much swollen beyond the middle, smaller towards the apex, which is obliquely truncate, set in front with long erect setæ; third joint slender, elongate, oval, about equal in length to the first.

“*Antennæ* about three fourths the length of the body, gradually clavate; the club slender, rather pointed, grooved below.

“THORAX oval, not robust; the prothorax small, but distinct.

“*Fore wing* triangular; the costal margin and apex slightly rounded; outer margin sinuate-dentate, not two thirds the length of the costa; inner margin slightly sinuate, rather longer than the outer. Costal nervure stout, not extending much beyond the middle of the wing; subcostal nervure slender, placed very close to the costal, five-branched, its first branch thrown off just before the end of the cell; the first and second, and the third and fourth, branches about equally distant from one another; the third rather nearer to the second than to the fourth. Discoidal cell not quite half the length of the wing. Upper discocellular nervule almost wanting; middle discocellular nearly straight, directed slightly inwards; lower discocellular twice the length of the middle one, directed first slightly

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\* Cat. Lep. Mus. E. I. C. p. 163, pl. iii. a. fig. 5 (1857).

inwards, then curving outwards, uniting to the third median nervule almost immediately beyond its origin.

“*Hind wing* subtriangular, all the margins of about equal length; the anterior slightly, the outer much, rounded, the latter more or less deeply dentate; the inner margin forming a distinct channel for the reception of the abdomen, emarginate beyond the termination of the internal nervure.

“*Fore legs* of the male with the femur and tibia of about equal length, subcylindric, slightly compressed; tarsus one-jointed, shorter than the tibia, subcylindric, slightly compressed, rounded, or slightly slenderer, towards the apex. Of the female scarcely, if at all, longer than those of the male: femur and tibia of about equal length, nearly cylindric, the latter slightly spiny within; tarsus shorter than the tibia, five-jointed; the first joint nearly double the length of the rest combined, largest towards the apex; the other joints transverse, successively shorter; all the joints, except the fifth, armed on each side at the apex with a stout spine, covered more or less by a tuft of stiff hairs at the base of the following joint.

“*Middle and hind legs* with the tibiæ rather shorter than the femora, spiny; the spurs distinct; tarsi about equal in length to the tibiæ, very spiny; the spines above slender, much stronger at the sides and below, forming three well-defined series along the sole of the foot. First joint equal to the rest combined; second rather dilated; the spines, especially the lateral ones, longer than on the other joints. Claws elongate, grooved below, lobed at the base, acute, but little curved, except at the base and apex. Paronychialia and pulvilli wanting or rudimentary.

“*ABDOMEN* subcylindric, shorter than the inner margin of the hind wing.” (*Doubleday, l. c.*)

### **Cethosia biblis.**

*Papilio biblis*, Drury, Ill. Exot. Ent. i. pl. iv. fig. 2 (1770); Cram. Pap. Exot. ii. pl. clxxv. figs. A, B (1777).

*Cethosia biblina*, Godart, Enc. Méth. ix. p. 248 (1819).

*Cethosia biblis*, de Nicéville, Butt. Ind. ii. p. 36 (1886); Distant, Rhop. Malay., Append. p. 446, pl. xxxviii. fig. 3, ♂ (1886).

*Papilio penthesilea*, Fabricius (nec Cramer), Spec. Ins. ii. p. 88 (1781).

“*Male*. Upperside rich orange-red, the apical half of the fore wing and the outer margin of the hind wing black. The cilia white, tipped with black at the end of the nervules. Fore wing with the cell crossed by three pairs of narrow somewhat irregular black lines, a discal series of narrow black linear spots from the third median nervule continued on the hind wing to the subcostal nervure, sometimes wanting, three small white subcostal spots beyond the end of the cell, a discal series of five decreasing white elongate lunules, their apices directed inwards, beyond which are seven reniform white spots, the two upper ones very indistinct, a marginal series of deeply-indented white lunules. Hind wing with a discal series of six oval blackish spots, a submarginal series of faint blackish spots, placed in pairs between the veins, the margin with white lunules as on the fore wing, an additional white lunule defined on both sides with black at the anal angle, the abdominal margin yellowish. Underside reddish-ochreous. Fore wing with the cell crossed by three pale greenish bands, each band with two black lines outwardly, the third band at the end of the cell with an additional black line in

its middle defining the discocellulars. A pale discal band beyond the cell, with black linear spots between the veins on its inner and outer edges; a discal decreasing series of six white lanceolate spots, each spot outwardly defined with black and with a black centre divided by a white line; beyond the lanceolate spots is a pale whitish band bearing pairs of small black spots between the veins, the outer margin bearing yellowish lunules outwardly defined with a black line, and enclosing a black space, with a short white streak from the margin directed inwards, but not reaching the apex of each lunule. Hind wing with the base red; then a pale greenish irregular band bearing narrow black lines in pairs; then a red band; a pale band in continuation of the one beyond the cell of the fore wing, and similarly bordered with black linear spots; a fulvous band; a white band bearing a series of black conical spots with a black spot on either side of them, the outer edge of the white band with small round spots in pairs; another fulvous band; the margin marked as in the fore wing. Antennæ black; thorax black with long bronzy hairs; abdomen ochreous.

“*Female*. Upperside with ground-colour, especially of the fore wing, dusky ferruginous, in some specimens dusky greenish. Otherwise as in the male.” (*de Nicéville, l. c.*)

In some female specimens from China the ground-colour of the secondaries is greenish-grey with a very slight ferruginous tint only observed in certain lights.

The males range from 89–100 millim., and the females from 86–114 millim. in expanse.

This species is fairly abundant at Chia-kou-ho, Huang-mu-chang, and Omei-shan in Western China at elevations ranging from about 4000 feet to 7000 feet, and also occurs, at lower elevations, at Ichang in Central China.

According to M. de Nicéville *C. biblis* is common up to 7000 feet in Sikkim, Assam, and the Khasi Hills. It is also recorded from Upper Burma, Mergui, and Perak, and from Hainan, China.

### Genus KALLIMA.

*Kallima*, Westwood, Gen. Diurn. Lep. ii. p. 324 (1850); de Nicéville, Butt. Ind. ii. p. 257 (1886).

“**BODY** robust; fore wings large, generally acute at the tip; hind wings gradually produced into a tail at the anal angle; all the wings traversed across the middle beneath by a straight dark-coloured line.

“**HEAD** large, densely squamose, with a large rounded tuft of scaly hairs in front.

“*Eyes* large, naked, and prominent.

“*Antennæ* scarcely more than two fifths of the length of the fore wing, nearly straight, terminated by a gradually-formed slender club, scaly above, finely carinated beneath, rounded off obliquely beneath.

“*Labial palpi* large, porrected obliquely at least to the level of the top of the eyes, and advanced

in front of the face to at least the length of the head, forming conjointly an elongate conical beak in front, densely scaly to the tip, the scales concealing the articulations, with a coat of hairs on the back of the middle joint, applied to the face.

“THORAX elongate-ovate, very scaly; *abdomen* moderately robust, oval.

“*Fore wings* large, subtriangular. Fore margin very much rounded, slightly emarginate near the base. Apical angle more or less acute and produced. Apical margin five sixths of the length of the anterior, concave below the apex, but more or less concave or subangulated towards the posterior angle (especially at the extremity of the first branch of the median vein). The costal vein extends to the middle of the costa; subcostal vein with two branches arising before the anterior extremity of the discoidal cell; each free and extending to the costa; third branch arising beyond the extremity of the discoidal cell, and extending to the tip of the wing, fourth branch arising at about five sixths of the length of the wing, and extending to the apical margin below the apex. Upper discocellular vein very short, almost obsolete; middle discocellular short, slightly curved and rather oblique, being directed towards the base of the wing; outer discocellular slender, curved rather obliquely, the curve being towards the base of the wing, and uniting with the median vein just beyond the origin of its third branch, which is very much arched; the anterior extremity of the discoidal cell reaches just one third of the length of the fore wing, and its posterior extremity is somewhat shorter.

“*Hind wings* elongate, subtriangular; costal margin much arched at the base, outer margin rounded, anal angle gradually produced into a tail, which is traversed by the submedian vein. Precostal vein oblique, curved outwardly at the tip; costal vein extending to the outer angle; postcostal vein branching nearer the base than the median vein; discoidal cell closed by a curved lower discocellular nervule, rather before the middle of the wing.

“*Fore legs* of the male small, pectoral, moderately hairy, but not forming a dense brush, slender; tarsus about two thirds of the length of the tibia, simple, exunguiculate: of the female longer than those of the male (especially the tarsus), slender, scaly; femur with a row of short hairs on the inside, set on at right angles; tarsus nearly as long as the tibia, dilated at tip, the inside of which is obliquely rounded off, and armed beneath with four pairs of short spines, indicating the articulations at the extremity, terminal joint very minute and simple.

“*Four hind legs* moderately long, not very robust; tibiæ with two rows of very short spines beneath, tibial spurs short; tarsi armed beneath with four rows of small spines; ungues slender, very much curved.” (*Westwood, l. c.*)

### **Kallima inachis.**

*Paphia inachus*, Boisduval, Cuv. Règne Anim., Ins. ii. pl. 139. fig. 3 (1836).

*Amathusia inachis*, Herr.-Schäff. Exot. Schmett. figs. 7, 8 (1852).

*Kallima inachis*, Moore, Trans. Ent. Soc. Lond. 1879, p. 11; de Nicéville, Butt. Ind. ii. p. 261 (1886).

“Upperside. Fore wing with broad fulvous band extending to outer margin. A short apical point in the male and a very prolonged one in the female; the discal hyaline spot larger than in the other species [of *Kallima*]. Hind wing bright violet-blue, the outer border paler, and prominently marked with short brown strigæ. Underside ochreous-brown, vinous tinted,

minutely brown-speckled; rib-line indistinct. A large, dark, bright violet-blue prominently-marked species." (*Moore, l. c.*)

This species varies in the blue colour of the upperside; in the majority of specimens this is very deep in tone, in others it is pale, and in a few it is greenish or "peacock"-blue. On the under surface the ground-colour ranges from pale drab to deep ochreous, sometimes deeply suffused or heavily clouded with purple-brown, reddish-brown, or violet-brown. The rib-like mark is generally well defined, especially on the secondaries; sometimes it is black edged inwardly with pale grey, and sometimes it is yellowish-grey narrowly edged outwardly with brownish. Some specimens have fungus-like black spots, others are finely or coarsely irrorated with black or brown. The ocelli, usually two on each wing, resemble the "spangle galls" often seen on fallen leaves.

Occurs at Moupin, Omei-shan, Chia-kou-ho, and Chia-ting-fu in Western China, and at Chang-yang in Central China. In India it is found in the North-west Himalayas, Nepal, and Sikkim.

#### Genus CHARAXES.

*Charaxes*, Ochseneheimer, Schmett. Eur. iv. p. 18 (1816); Felder, Neues Lep. p. 39 (1861); de Nicéville, Butt. Ind. ii. p. 269 (1886).

*Nymphalis*, Westwood (*nec* Latreille), Gen. Diurn. Lep. ii. p. 306 (1850).

"BODY extremely robust; hind wing generally with one or two tails; underside of the wings beautifully ornamented with patches and markings of varied colours. Female scarcely differing in appearance from the male, but larger and sometimes with a paler oblique bar on the fore wing.

"HEAD moderately large, woolly, not tufted in front.

"*Eyes* very prominent, naked.

"*Palpi* large, porrected obliquely; the tip elevated considerably above the level of the top of the eyes and extending in front of the head nearly as far as its length, rather apart at the base, but approximating at the tip, thickly scaly; the extremity of the second joint above clothed with short erect hairs, resting upon the face in repose; terminal joint somewhat naked, small and conical, inside with the scales more hair-like.

"*Antenne* rather short, not half the length of the fore wing, strong, straight, terminated by a long, gradually-formed, but not very robust, fusiform club, slightly attenuated at the extreme tip, where it is obliquely truncate, with a very fine carina on the underside, on each side of which is a very slight longitudinal impression.

"THORAX very robust, oblong, thickly clothed with wool, especially on the metathorax.

"*Fore wing* subtriangular; costal margin moderately arched; apical angle somewhat acute, but rounded off at its extremity; outer margin oblique, slightly emarginate and almost

entire, three fourths of the length of the costa; inner margin straight, about equal in length to the outer margin. Veins very strong; costal nervure not extending to the middle of the costa; subcostal nervure with the first and second branches arising before the anterior extremity of the discoidal cell, third branch arising at a very little distance beyond the cell, fourth branch arising also at a small distance beyond the third, at rather more than the length of two fifths of the wing from the base; elbowed downwards towards the tip of the wing; upper discocellular nervure arising at about the length of one third of the wing from the base, very short, transverse, as is also the rather longer middle discocellular; the lower discocellular still longer, straight, transverse, very slender and uniting with the third median nervure at some distance from its origin, closing the discoidal cell transversely; third median nervure gradually arched.

“*Hind wing* large, somewhat ovate, not ocellated beneath; costal margin arched; outer margin more or less dentate and tailed, the tails being produced at the extremity of the first and third median nervures. Precostal nervure oblique, the tip rather suddenly bent outwards; discoidal cell small and narrow, closed imperfectly by a very fine discocellular nervure, which unites the discoidal nervure with the median nervure just before its third branch is thrown off.

“*Fore legs* of the male very minute, scaly, and clothed with fine, silky, rather short, black hairs above and white ones below; the tibia and tarsus being together not, or but little, longer than the femur; the tibia twice the length of the tarsus, which is indistinctly articulated beyond the middle and towards the tip when denuded of scales. Of the female half as long again as those of the male, scaly; the femur with a slight row of fine hairs on the inside; tibia two thirds of the length of the femur; tarsus about as long as the tibia, compressed, dilated at the tip, which is obliquely rounded off, with several pairs of spines towards the tip on the underside, indicating the articulations; the basal joint being scarcely more than half of the length of the tarsus.

“*Middle and hind legs* rather short, very robust, finely scaly; tibia shorter than the femur: flat beneath; intermediate tibia with an oblong patch of delicate plush at the base; each side with a row of fine short spines; tibial spurs short; tarsi robust, scaly, with four rows of short spines beneath; claws moderate; paronychialia very small; the inner lobe very short, outer lobe acute, curved.

“**ABDOMEN** rather short, nearly ovate in the female.

“**LARVA** without any spines on the body, which is gradually attenuated behind; terminated by a depressed bicuspidated tail; the head armed with four obtuse horns. *Pupa* abbreviated, rounded, subconical, scarcely carinated down the back.” (*Westwood, l. c.*)

The genus *Charaxes* has a wide area of distribution; one species, *C. jasius*, is found on the European shores of the Mediterranean and a close ally in Abyssinia. “The genus also inhabits Eastern, Western, and the warmer portions of Southern Africa. It is apparently in Western Tropical Africa that *Charaxes* is found in its maximum of size, beauty, and abundance of species, though the neighbourhood of Delagoa was recently pronounced by Mr. Hewitson to be the ‘head quarters’ of the genus. Madagascar possesses



some very distinct species, and travelling eastward the genus has recently been discovered in the Island of Socotra by Prof. Balfour. It is common in continental India, found in Ceylon and the Andaman Islands, occurs throughout Burma, Tenasserim, and the Malay Peninsula, Eastern Asia as far north as China, and through the length and breadth of the Malayan Archipelago, Its distribution in the Pacific Islands appears at present very limited, but it is found in Australia." (*Distant*, Rhop. Malay. p. 101.)

### **Charaxes polyxena.**

*Papilio polyxena*, Cramer, Pap. Exot. i. pl. liv. figs. A, B (1775).

*Papilio bernardus*, Fabricius, Ent. Syst. iii. 1, p. 71 (1793); Donovan, Ins. China, pl. xxxiv. (1844).

- "*N.* alis fulvis, anticis apice atris, fasciâ mediâ flavâ, posticis caudatis strigâ punctorum ocellatorum. Expans. alar.  $3\frac{1}{2}$  unc.
- "*N.* with fulvous wings, the anterior black at the tips with a broad pale yellow band, the posterior tailed with a row of black ocellated spots. Expanse of the wings  $3\frac{1}{2}$  inches." (*Donovan*, l. c.)

Donovan states that Fabricius described this species from the drawings of Mr. Jones, and adds:—"I possess a specimen in which the central fascia is nearly white, and is continued halfway across the posterior wings, and the black spots in the latter are very broad and confluent, without white in the centre;" thus recognizing the variable character of this species.

In my Chinese specimens the male differs from the type of *Ch. hindia*, figured by Mr. Butler\*, in the absence of the white fascia on upper surface of secondaries, and the female has a series of white spots on primaries just beyond the central fascia; but both sexes agree fairly well with specimens under this name in the National Collection at South Kensington.

\* *Charaxes hindia*, Butler, Lep. Exot. p. 99, pl. xxxvii. fig. 5, ♂ ♀ (1872).

- "♂ ♀. Affinis præcedenti [*C. jalinder*, Butl.], differt supra area basali clariore, fasciola discocellulari melius expressa, lituris medianis obsoletis; virgula in fasciam nulla; fascia alba latiore, infra ramum primum medianum anticarum fulvo-tincta; area externa anticarum latiore, maculis discalibus in mare majoribus, superioribus autem obsoletis, in fœmina fulvis vix conspicuis; fascia nigra posticarum magis maculari et multo angustiore: ætæ subtus multo pallidiores; fascia media in anticis minus obliqua, area latiore ochracea; area discali multo latiore: exp. alar. ♂, unc. 3 lin. 7; ♀, unc. 4 lin. 2.
- "Mr. Moore has two specimens of the female of this species, one of which is scarcely larger than the male; it is a conspicuous form and may be distinguished without trouble; the female has the external area of the wings much browner than in any other species with which I am acquainted, but this may be partially due to fading." (*Butler*, l. c.)

Mr. Elwes, referring to *Ch. hindia* in his paper on the Lepidoptera of Sikkim (Trans. Ent. Soc. Lond. 1888, p. 369), considers it to be synonymous with *Ch. pleistoanax*, Feld. (Reise Nov., Lep. iii. p. 443, 1867), and *Ch. jalinder*, Butler (Lep. Exot. p. 98, pl. xxxvii. fig. 4). He states that in Sikkim it occurs commonly from April to October up to 3000 feet, and concludes his remarks by suggesting that when a large number of specimens of these tawny *Charaxes* from different localities are compared, the present number of species will be greatly reduced.

I have one male specimen from Omei-shan and a female from Moupin, Western China.

### **Charaxes narcæus.**

*Nymphalis narcæus*, Hewitson, Exot. Butt. i., *Nymph.* pl. i. figs. 1, 4 (1854).

*Charaxes narcæus*, var. *thibetanus*, Oberthür, Etud. d'Entom. xv. p. 11, pl. ii. fig. 10 (1891).

*Charaxes mandarinus*, Felder, Reise Nov., Lep. iii. p. 437 (1867).

*Charaxes satyrina*, var. *menedemus*, Oberthür, tom. cit. xv. p. 13, pl. ii. fig. 9 (1891).

“Upperside white, tinted with green on the anterior wing, with yellow on the posterior. Anterior wing with the base clouded with light brown. The costal and outer margins, and a transverse narrow band sinuate on its outer edge and parallel to, and at a short distance from, the outer margin, brown; a black longitudinal band, marking the course of the median nervure and its third nervule, joins the transverse band with the clouded space at the base, and is itself joined to the costal margin by a black line across the end of the cell. Posterior wing with two tails; the base and the upperside of the abdominal fold light brown; crossed beyond the middle to the anal angle by a band of brown, nearly continuous with the band of the anterior wing; the outer margin and a row of lunular spots near it brown; the anal angle marked by two black spots, one oval with a crimson centre, the other round centred with white, both margined with light blue, below with orange. Underside as above, except that both wings are tinted with green, that the margins and bands are bordered with silvery white, that the bases of the wings are unclouded, that there is a rufous band on the posterior wing, which commences on the costal margin near the base, and passing down the upperside of the abdominal fold joins the transverse band at the anal angle, and that the lunular spots near the outer margin and the two spots at the anal angle, described above, are here represented by eight small round black spots. Expanse  $3\frac{4}{10}$  inches.” (*Hewitson, l. c.*)

Var. *menedemus*, Oberthür. Is said to differ from the type in being smaller and more brilliantly coloured; but the most important character appears to be the shorter and more obtuse tails.

This form was taken by M. Dubernard at Tsé-kou in Western China. My collectors failed to meet with it in any part of China that they visited.

M. Oberthür described the above form as a variety of *Charaxes* '*satyrina*,' Butler; but as I was quite unable to find any trace of such a species, and as Mr. Butler knew nothing whatever of a *Charaxes* bearing the specific name *satyrina*, I wrote to M. Oberthür for information. In his reply he stated that he found the name in question on a specimen of *Charaxes* which he had purchased, with other species, from a London dealer.

Var. **mandarinus**, Felder. "Alæ supra ut in *Ch. narceus*, sed fundi colore nigro-fusco basin etiam occupante, fasciam igitur viridulam intus etiam terminante, fascia limbali maculari, angustiore, præsertim in posticis, in his simplicie, ocello anali posticarum majore, nigro.

"Alæ subtus ut in *Ch. narceus*, sed fascia discali ampliore, limbali in anticis extus late subargenteo limbata, in posticis angustiore, quam in specie dicta, grossius nigro punctata, striga violascente posticarum angustiore.

"*Habitat.* Shanghai (*Dr. Muirhead*). Coll. F." (*Felder, l. c.*)

Var. **thibetanus**, Oberthür. Appears to be identical with Felder's *mandarinus*, which has a broader black band and marginal border than in typical *narceus*. In some examples of this form the basal area is entirely black.

I have in my series of this species all the gradations between the *mandarinus* form and typical *narceus*, including specimens exactly agreeing with Oberthür's figure of his *thibetanus*, the type of which M. Oberthür informs us was taken by my collector, Mr. Pratt, at Chang-yang, which is in Central China and over 500 miles from the Thibetan frontier.

Occurs throughout Eastern, Central, and Western China from Ningpo to Moupin. The species is on the wing from April to August, but the type-form appears only to be found from April to June.

### **Charaxes posidonius.** (Plate XIV. fig. 4, ♂.)

*Charaxes posidonius*, Leech, Entomologist, xxiv., Suppl. p. 30 (May 1891).

*Charaxes clitiphon*, Oberthür, Etud. d'Entom. xv. p. 12, pl. ii. fig. 11 (July nec June 1891).

*Male.* Closely allied to *Charaxes narceus*, var. *mandarinus*, Feld., but the discal cell of primaries is filled up with blackish, there is a small green elongate spot just outside the cell, and a double spot of the same colour beyond; the submarginal band is composed of smaller and yellow spots. On the secondaries the central, oblique, fuscous streak is not continued much beyond the middle of the wing; the marginal band is formed of quadrate and lunular, white or cream-coloured spots,—from the lower edge of the fourth, fifth, and sixth bluish streaks are projected into the tails, which are longer and thicker than in *mandarinus*; there are also some bluish marks, above anal angle, along the inner edge of the black band. On the under surface the discal cell of primaries is filled up with greyish and spotted with black; there is a wedge-shaped olive-brown blotch edged outwardly with black beyond the cell; and the

olive-brown submarginal band is followed by a whitish one, composed of lunular spots, each edged outwardly with blackish: the inner edge of the marginal band of secondaries is more indented than in *mandarinus*, and the blackish outer margin is bordered internally with reddish and yellow; the abdominal fold is speckled with black.

Expanse 88 millim.

Two males taken at Wa-ssu-kow in June, and one at Ni-tou in May, at an elevation of 5000 feet.

M. Oberthür describes this species from Tsé-kou in Western China under the name of *C. clitiphon*.

### **Charaxes rothschildi.** (Plate XIV. fig. 3, ♂.)

*Charaxes ganymedes*, Leech, Entomologist, xxiv., Suppl. p. 30 (1891).

*Male.* This species bears a strong resemblance to *Charaxes eudamippus*, Doubl., but it is distinguished by the broader marginal borders of all the wings. On the primaries the costal border is continued to the basal third of the wing, which is entirely black; the whitish ground-colour is thus restricted to the lower portion of central third, and is intersected by the nervures; there is a large white spot at the end of discal cell, and two smaller ones beyond; the submarginal band is composed of eight white spots, the costal one very small, and that on inner margin double; there is a second macular whitish band nearer to, and parallel with, the outer margin, formed of nine spots. On the secondaries the black border occupies the whole of the outer third of the wing, and is traversed by a bluish-white band, which is interrupted and more decidedly blue towards anal angle. The tails are thicker and shorter than those of *C. eudamippus*. On the under surface the colour is silvery grey; the markings are formed as in *C. eudamippus*, but are brown in colour and edged with black. The body is black.

Expanse, ♂ 98 millim., ♀ 106 millim.

Appears to be a scarce species and so far has only been found at Chow-pin-sa, Omei-shan, and Moupin in Western China. It occurs in July and August at an elevation of about 5000 feet.

As I find that the name *ganymedes* has previously been used for a species of *Charaxes* by Westwood (Gen. Diurn. Lep. p. 339, 1851), I have substituted the name *rothschildi* for the present species.

### Genus HYPOLIMNAS.

*Hypolimnas*, Hübner, Verz. bek. Schmett. p. 45 (1816).

*Diadema*, Sect. 1, *Diadema*, and Sect. 5, *Eurotia*, Westwood, Gen. Diurn. Lep. ii. pp. 279-281 (1850).

*Hypolimnas*, de Nicéville, Butt. Ind. ii. p. 121 (1886).

“Body moderately robust; wings large, those of the male generally more brilliantly coloured than those of the female; head and neck often marked with small white spots.

- “HEAD moderately large, with a frontal tuft nearly reaching to the tip of the second joint of the palpi.
- “Eyes prominent, naked.
- “Labial palpi porrected, rather more than twice the length of the head, ascending obliquely, but scarcely elevated above the level of the middle of the eyes, rather flattened beneath, scaly; the scales lying flat except at the base, beneath which they are slightly elongated, and also near the middle of the upperside of the second joint, where there is an elongated tuft of white scales, and another near the tip within, which causes the apical joint to be as wide apart as the space between the eyes; the terminal joint is elongate-ovate, slightly pointed at the tip, and about one fourth of the length of the second joint.
- “Antennæ short, scarcely above three fourths of the length of the body and not half the length of the wings, slender, slightly curved, terminated by a distinct, rather small club, not occupying more than one fifth of the length of the antennæ; club obovate, terminated by a very minute acute point.
- “THORAX moderately robust, hairy, especially on the metathorax; neck short, marked with small white spots; wings large.
- “Fore wings subtrigonal. Fore margin much arched; apical angle not regularly rounded. Apical margin about three fourths of the length of the anterior, angulated below the apex, emarginate below the angle; margin slightly scalloped. Inner margin slightly concave, about the same length as the apical one. Costal vein extending beyond the middle of the costa. Subcostal vein with its first branch arising about one fourth from the base of the wing; second branch arising at a little distance beyond the first, and before the anterior extremity of the discoidal cell; third branch arising at about two thirds of the length of the wing and extending to the tip; fourth branch arising halfway between it and the apex and reaching the apical margin at a little distance below the apex; the terminal portion of the vein slightly deflexed. Upper discocellular very short, almost obsolete, arising from the subcostal at about one third of the length of the wing; middle discocellular short, curved obliquely outwards; lower discocellular slightly curved, about three times as long as the middle one, and uniting with the third branch of the median vein at a little distance beyond its origin, closing the discoidal cell at a little more than one third of the length of the wing; the third branch is considerably curved beyond the discoidal cell.
- “Hind wings broad, nearly rounded. Anterior margin much arched. Outer margin somewhat longer than the anterior, rounded and scalloped. Precoastal vein curved outwardly. Costal vein much curved, extending to the outer angle. Subcostal vein branching at about one fifth of the length of the wing. Upper discocellular arising very close to the base of the subcostal branch; lower discocellular arising at about the same distance from the base of the upper discocellular, curved, and united with the median vein exactly at the origin of its third branch, closing the discoidal cell.
- “Fore legs of the male short and pectoral, scaly; femora clothed beneath with rather long scaly hairs; tibia and tarsus scaly; tibia slightly curved. Tarsus not more than one third of the length of the tibia, elongate-ovate, exarticulate. Fore legs of the female considerably larger; the femur and tibia similarly clothed; tarsus scaly, more than two thirds of the length of the tibia, distinctly articulated, the basal joint occupying nearly three fourths of the whole tarsus, with two strong spurs at its tip beneath; second, third, and fourth joints very short, obliquely truncate, spined beneath at the tip; fifth joint minute, but with similar spines.

"Four hind legs rather long, scaly; tibia with two rows of short spines, and rather long tibial spurs; tarsi with several rows of shorter spines beneath and at the sides; claws moderate.

"LARVA cylindrical; head with two erect spines, each of the following segments with several shorter spines. Pupa robust; hunched on the back; abdomen-case spined." (*Westwood, l. c.*)

### **Hypolimnias bolina.**

*Papilio bolina*, Linnæus, Syst. Nat. x. p. 479 (1758); Clerck, Icones, ii. pl. xxi. fig. 2, ♂ (1764).

*Hypolimnias bolina*, Distant, Rhop. Malay. p. 165, pl. xii. figs. 10, 12, ♂; pl. xv. fig. 12, ♀ (1883); de Nicéville, Butt. Ind. ii. p. 123 (1886).

*Apatura bolina*, Moore, Lep. Ceyl. i. p. 58, pl. xxx. fig. 1, ♂, 1*b*, larva and pupa (1881).

*Papilio jacintha*, Drury, Exot. Ent. ii. pl. xxi. figs. 1, 2, ♀ (1773); Donovan, Ins. China, pl. xxxvii. fig. 1, ♀ (1798).

*Apatura jacintha*, Moore, Lep. Ceyl. p. 58, pl. xxx. fig. 1*a*, ♀ (1881).

"*Male*. Upperside very dark indigo-blue. Fore wing with a large elongate and macular white spot at end of cell, margined with bright bluish, commencing near the upper discoidal nervule and terminating near the second median nervule; two or three small subapical white spots divided by the fourth and fifth subcostal nervules; and sometimes followed by a few minute submarginal whitish spots placed between the nervules. Hind wing with a large central white spot, broadly and irregularly surrounded by pale bluish, which commences on lower half of cell, and is bounded by the upper subcostal and the third median nervules; a series of minute and frequently subobsolete submarginal white spots placed between the nervules. Fringe of both wings alternately white. Underside dark olivaceous-brown. Fore wing with the white markings as above, but with the large macular spot at end of cell almost extending to costa, not prominently margined with bluish, and followed by a small pale spot beneath the second median nervule; submarginal spots distinct, one on each side of third median nervule largest and bluish; a pale lunulate submarginal fascia and a similar but more linear marginal fascia, which are almost obsolete above the lower discoidal nervule; basal half of costal area minutely irrorated with greyish; cell with three upper small and irregular white spots more or less surrounded with dark fuscous. Hind wing with a broad medial whitish fascia, commencing near upper subcostal nervule, where it is preceded by a subcostal spot, and terminating near anal angle; a submarginal series of bluish-white spots placed between the nervules followed by a submarginal series of greyish subconical spots placed in pairs between the nervules; marginal linear lunulate spots as on fore wing. Fringe as above. Body above dark indigo-blue, the head marked with a few pale spots; body beneath and legs more or less concolorous with wings; the palpi beneath white, the legs beneath more or less greyish, and the abdomen and thorax with a few whitish spots.

"*Female*. Upperside dark olivaceous-brown. Fore wing with a few small bluish subcostal spots above cell; a transverse blue macular fascia beyond end of cell; a submarginal series of white spots placed between the nervules, the two uppermost of which are largest and contiguous, followed by a submarginal and marginal series of waved and linear greyish spots, between which the colour is somewhat paler. Hind wing with a submarginal series of greyish spots placed between the nervules, followed by a series of subconical spots of the

same colour, which are placed conjointly in pairs between the nervules; marginal spots as on fore wing, but more lunulate. Fringe of both wings alternately greyish. Underside brownish ochraceous. Fore wing with the marginal and submarginal markings as above, the macular fascia at end of cell subobsolete and greyish; the basal half of wing is pale castaneous, with the costal area and cell marked as in male. Hind wing with the marginal and submarginal markings as above, and the centre crossed by a faint greyish fascia more or less corresponding to that on the wings of the male." (*Distant, l. c.*)

"Larva purple-brown, head armed with two long erect branched spines, the segments with a dorsal row of three long branched red spines, and three lateral rows of spines. Pupa thick, purple-brown, blotched with black; abdominal segments with stout pointed dorsal tubercles; head obtuse, pointed in front, thorax angular at top." (*Moore, l. c.*)

Occurs in Western China at Ni-tou in May; Chia-ting-fu, July; Chia-kou-ho, August. Drury and Donovan figured the female of *H. bolina* under the name of *P. jacintha*, and referring to this sex Mr. de Nicéville says:—"The variations of it, which are casual and inconstant, are mainly confined to the greater or less prominence of the blue macular fascia on the upper-side of the fore wing and the greater or less prominence of the whitish submarginal band on the hind wing; in one extreme consisting of small conical spots in pairs between the nervules, in the other extreme these spots are generally elongated, entirely filling the spaces between the veins, and coalescing with the discal spots towards the anal angle. On the underside the females in all cases appear to correspond with the larger form\*, and not with the typical smaller form in style of markings." With regard to the distribution of the species in India, Mr. de Nicéville remarks: "*H. bolina* is in most parts of the country one of the commonest as well as one of the most beautiful of the Indian butterflies; in the drier portions of Western Continental India it is rare, but even there it may occasionally be found in gardens. In the moister regions, particularly in the warm valleys and submontane tracts, it abounds, and the flash of the brilliant purple as it opens and closes its wings while sunning itself on some flower or spray of foliage meets the eye at every turn."

\* Distinguished by the "paler and more uniform coloration of the under surface; absence of pure white markings, those on the upper surface being irrorated with bluish, and those on the under surface with brown." (*de Nicéville.*)

## Genus DICHORRAGIA.

*Dichorragia*, Butler, Proc. Zool. Soc. Lond. 1868, p. 614; de Nicéville, Butt. Ind. ii. p. 141 (1886).

*Adolias*, Sect. 6, Felder, Neues Lep. p. 35 (1861).

“Most nearly allied to *Apatura* (*A. erminia*), but differing slightly in the neuration, the discoidal cell of the hind wing partially closed by an interrupted and rather delicate lower discocellular nervule. In colouring the type more nearly resembles *Symphædra cyanipardus*, ♀, than anything else, which probably accounts for its retention in *Adolias*. Typical species *Dichorragia nesimachus*.” (Butler, l. c.)

“Antennæ very slightly more than half the length of the fore wing. Fore wing with the costa gently arched, outer margin slightly emarginate and waved, inner margin straight, about equal in length to the outer. First subcostal nervule given off near the end of the cell, second just before its end, third opposite the termination of the costal nervule, reaching the apex of the wing; upper discocellular nervule obsolete; middle obliquely inwardly straight for a greater portion of its length, then sharply angled outwards; lower at first straight, upright, then angled outwards, joining the median nervule a little beyond the origin of the second median nervule; third median nervule much arched, submedian nervule sinuous. Hind wing with the costa moderately curved; outer margin gently waved, inner margin deeply channelled to enclose the abdomen; præcostal nervule upright, simple; discoidal cell closed by a fine sinuous lower discocellular nervule, joining the median nervule exactly at the origin of the second and third median nervules; third median nervule arched at the base, then straight, first median nervule slightly sinuous, internal nervule very sinuous.” (de Nicéville, l. c.)

**Dichorragia nesimachus.**

*Adolias nesimachus*, Boisduval, Cuv. Règne Anim., Ins. ii. pl. 139 bis. fig. 1 (1836); Moore, Trans. Ent. Soc. Lond. 1859, p. 83.

*Argynnis? hippomenes*, Herr.-Schäff. Exot. Schmett. figs. 11, 12 (1850).

*Dichorragia nesimachus*, Butler, Proc. Zool. Soc. Lond. 1868, p. 614; de Nicéville, Butt. Ind. ii. p. 141, pl. xix. fig. 82, ♂ (1886); Pryer, Rhop. Nihon. p. 22, pl. 5. fig. 10 (1886).

“Upperside black, suffused more or less with green. Fore wing with a number of whitish spots disposed about the basal half; at the extremity of discoidal cell three longitudinal streaks, and above these on costal margin some narrow streaks, white; a double submarginal row of narrow white zigzag lines, and a marginal row of white spots. Hind wing with whitish spots about the middle; a curved row of black spots above a submarginal row of narrow zigzag white marks, the latter more or less geminated about the middle; and a marginal row of narrow lunulated white lines. Underside black, with markings as above on fore wing, and tinged with blue, the spots on the hind wing bluish, but more or less obsolete, the surface of the wing being tinged with green; the row of deep black spots as above.” (Moore, l. c.)

The female is larger, but does not differ from the male in colour or marking.



Appears to be not uncommon in the mountainous district of Central Japan, but the female seems to be rare. I have specimens from Omei-shan and the neighbourhood of Ta-chien-lu in Western China: de Nicéville states that the species is common in Sikkim at low elevations and that its range extends as far as Sibsagar in Upper Assam. It also occurs in Borneo.

### Genus STIBOCHIONA.

*Stibochiona*, Butler, Proc. Zool. Soc. Lond. 1868, p. 614.

“Allied to *Diadema alimena*, but differing from it, from *Apatura*, and from *Adolias* in having the discoidal cells of both wings distinctly closed, the middle and lower discocellulars of fore wing forming a continuous arch, the upper discocellular of hind wing obliquely arched, the lower a little longer than the upper, slightly arched, and meeting the median nervure somewhat obliquely at the origin of the second and third branches. Colours intermediate between *Adolias cocytus* and *Diadema alimena*. Typical species *S. coresia*, Hübner.”  
(Butler, l. c.)

### **Stibochiona nicea.**

*Adolias nicea*, Gray, Lep. Ins. Nepal, p. 13, pl. xii. fig. 1 (1846); Moore, Trans. Ent. Soc. Lond. 1859, p. 83.

*Stibochiona nicea*, Butler, Proc. Zool. Soc. Lond. 1868, p. 614; de Nicéville, Butt. Ind. ii. p. 120, pl. xix. fig. 84, ♂ (1886).

*Adolias dolope*, Felder, Wien. ent. Mon. vol. iii. p. 184 (1859).

“*Male*. Upperside velvety black. Fore wing with a marginal, short submarginal, and a shorter third row of small white spots, the marginal row bounded inwardly by a row of small indistinct blue spots, also indistinct blue marks within discoidal cell. Hind wing with a marginal row of black spots encircled with blue inwardly, and with white outwardly. Cilia white. Underside brown-black. Fore wing as above. Hind wing with marginal row of white lunulated spots, and a submarginal row of minute white dots.

“*Female*. Upperside marked as in the male, but washed with olive-green, the marginal row of encircled spots of hind wing larger, and with a submarginal narrow greenish line. Underside with the three rows of white spots on fore wing extending to posterior margin. On the hind wing the marginal row of lunulated spots are larger, and there is a submarginal row of white spots, also a third inner row of bluish-white spots.” (Moore, l. c.)

Widely distributed in Western China, and in India it appears to occur throughout the Himalayas up to an elevation of 5000 feet.

Mr. Hocking (*teste* de Nicéville) states that *S. nicea* “flies like *Papilio pammon*, following the line of a hedge and passing in and out between the bushes;” and Mr. de Nicéville adds from his own observation that it has a quick flight and frequently settles with wings widely expanded, sometimes on the underside of a leaf.

## Genus EUTHALIA.

*Euthalia*, Hübner, Verz. bek. Schmett. p. 41 (1816); de Nicéville, Butt. Ind. ii. p. 191 (1886).

*Adolias*, Westwood, Gen. Diurn. Lep. ii. p. 289 (1850).

“BODY more or less robust; antennæ long and straight; wings large, generally of dull colours, with narrow, irregular, dark marks in the discoidal cell.

“HEAD wide, scarcely tufted in front.

“*Eyes* large, prominent, naked.

“*Antennæ* of very great length, slender, filiform at the base; beyond the middle very gradually incrassated to a long, cylindrical, abruptly terminated, slightly curved club, having two very slender raised lines on the underside, with an impression between them.

“*Labial palpi* small, very slightly projecting beyond the head, and elevated to the level of the middle of the eyes; second joint lengthened, and apparently increasing in breadth exteriorly, in consequence of the ridge of hairs on its upperside, beyond the middle; third joint very minute; palpi of the males larger than those of the females.

“*Tongue* spiral, of moderate length, robust, compressed towards the extremity, and provided with lateral spreading cilia.

“THORAX more or less robust, clothed with woolly hairs; wings generally of large size, with moderately strong veins; *abdomen* variable in size and thickness, according to that of the thorax.

“*Fore wings* somewhat triangular, with a lengthened, boldly curved costa; apical angle generally but slightly rounded. Apical margin variable, but generally a little emarginate in the middle, and scarcely scalloped; nearly three fourths of the length of the anterior. Inner margin about as long as the apical one, nearly straight. Costal vein strong, reaching a little beyond the middle of the costa; subcostal vein with the first and second branches arising before the anterior extremity of the discoidal cell, third subcostal branch arising at a little distance beyond, or sometimes close to, the extremity of the discoidal cell, and the fourth branch arising at about four-fifths of the length of the wing; upper discocellular vein extremely minute and almost obsolete, arising from the subcostal at about one third of the length of the wing; middle discocellular short, curved, and directed towards the base of the wing; lower discocellular obsolete in the typical species, so that the cell is open; median vein strong, its third branch moderately curved.

“*Hind wings* rounded, slightly acuminate at the anal angle in the males of some species, slightly scalloped along the outer margin. Costal margin slightly rounded; precostal vein curved outwards, subcostal vein branching near its base; upper discocellular forming the scarcely curved base of the discoidal vein; lower discocellular wanting, so that the narrow cell is open.

“*Fore legs* of the male very short and slender; femur clothed beneath with long divergent hairs; tibia nearly as long as the femur, thickly clothed with downy hairs; tarsus consisting of a single elongated attenuated joint, covered with a dense uniform down. Of the female scaly, with the first joint of the tarsi greatly elongated, the three following short, the last abruptly terminated, with several pairs of spines beneath indicating the three intermediate joints through the scales of the limb.

“*Four hind legs* moderately long, the middle pair in the male with the femur nearly one fourth longer than that of the hind legs, thickly scaly; middle tibia of the male with a thick coat of very short scaly hairs near the base beneath, and with two rows of short thick spines on all the tibiæ; tarsi considerably shorter than the tibia, rather thickly clothed at the sides and beneath with very short spines; claws rather large and very much curved; paronychæ small, bifid.

“*LARVA* chilopodomorphous, linear, lengthened, provided on each side with ten long, attenuated, spreading, branchiform appendages of nearly equal length, consisting of a midrib and lateral beards, decreasing in length towards the extremity, and imitating the structure of a very delicate plume, being armed with a terminal spike composed of a dense whorl of short robust spines. Feet short, minute, and entirely concealed by the lateral appendages. *Pupa* short, angular, attenuated at both ends, with two sides even, the third or ventral surface gently swelled or rounded; consisting of unequal pyramidal portions, the abdominal portion being the longest, and provided with two points, whilst the angles are armed with a few short spines, which are more robust at the union of the two pyramids; the longitudinal and transverse ridges ornamented with a delicate gold streak.” (*Westwood, l. c.*)

### **Euthalia confucius.** (Plate XXI. fig. 6, ♂.)

*Adolias confucius*, Westwood, Gen. Diurn. Lep. p. 291 note (1850).

*Euthalia confucius*, Grose Smith and Kirby, Rhopal. Exot. pt. xvii. (*Euthalia*) p. 7, pl. iii. figs. 1, 2, ♀ (1891).

“*Adolias* obscure fusco-viridis; alis anticis pone medium obscurioribus characteribus auriformibus nigris ante medium, striga obliqua submedia e maculis sex magnis irregularibus maculisque tribus subapicalibus albidis; posticis macula parva quadrata costali lunulaque adjecta albidis, fasciaque submarginali fusca: alis subtus viridi-griseis anticis in medio obscurioribus maculis characteribusque ut in pagina superiori; posticis etiam characteribus nonnullis nigris versus basin fasciaque undata alba pone medium e costa fere ad angulum analem extensa. Expans. alar. antic. unc.  $4\frac{1}{4}$ .” (*Westwood, l. c.*)

Olivaceous, sometimes tinged with yellowish. Primaries with black markings in the discoidal cell similar to those of *E. pratti*, but the outer one is more reniform; there is a broad oblique yellow macular band from middle of costa to first median interspace; three yellow spots towards apex precede the blackish submarginal band; marginal area paler with a conspicuous pale blotch in the submedian interspace. Secondaries have a yellow central band which is broad towards costa and tapers to a fine point at third median nervule; a continuation of this band (not always present) is represented by an oblong spot in second median interspace and a round one in first median interspace; submarginal band blackish, interrupted, and the area beyond is rather paler. Fringes white, broadly chequered with blackish. Antennæ black above, reddish beneath. Under surface, greenish white; on the primaries the central band and spots towards apex are reproduced in white; the band is preceded by a black line, which increases in width and assumes band-like proportions towards the inner margin; the black submarginal line terminates in a large black blotch in submedian interspace: secondaries have the black subbasal markings similar to those of *E. pratti*, but less broken up; the central band is white and continuous from costa to first median interspace, its inner edge is indented and bordered with dark olive; submarginal band dark olive, merging into black towards anal angle.

*Female.* Larger than the male. The spots towards apex of primaries are whitish and the third one is small or altogether absent; the band on upper surface of secondaries is represented by a large spot on costa and a curved one below.

Expanse, ♂ 92–106 millim., ♀ 108–126 millim.

In some examples of the male a continuation of the central band of primaries is represented by one or two yellow spots in submedian interspace, and where the yellow band of secondaries terminates at, or above, the first median nervule there is a blackish continuation to the first median interspace.

Occurs commonly in Western and Central China.

### **Euthalia kardama.**

*Adolias kardama*, Moore, Trans. Ent. Soc. Lond. 1859, p. 80, pl. ix. fig. 3.

*Euthalia kardama*, Grose Smith & Kirby, Rhopal. Exot. pt. xv. (*Euthalia*) p. 5, pl. ii. figs. 1, 2, ♂, 3, ♀ (1891).

*Adolias armandiana*, Poujade, Ann. Soc. Ent. Fr. 1885, p. ccxvi.

“*Male.* Upperside olive-green, brownish along exterior margins: fore wing with row of eight small yellowish-white spots curving from middle of anterior to middle of posterior margin; also two subapical spots; a submarginal row of indistinct blackish spots, the space between this and the curved row patched with yellowish white, marks at base of wing black: hind wing with transverse row of six yellowish-white spots, diminishing in size to a small dot, the three anterior spots confluent, with a broad hemispherical outer border; an indistinct submarginal blackish line. Underside suffused with grey, marked as above.

“*Female.* Upperside as in male, but the spots larger, the discal space paler. Underside as in the male.

“Expanse of male  $3\frac{1}{2}$ , female 4 inches.” (*Moore, l. c.*)

The type of *E. (A.) armandiana*, Poujade, in the Paris Museum is a female and was taken by M. l'Abbé David in Moupin.

This is the commonest Chinese species of *Euthalia*, and is widely distributed throughout Western and Central China.

### **Euthalia sahadeva.** (Plate XXI. fig. 2, ♂.)

*Adolias sahadeva*, Moore, Trans. Ent. Soc. Lond. 1859, p. 80, pl. viii. fig. 3, ♂; Butler, Proc. Zool. Soc. Lond. 1868, p. 601.

*Euthalia sahadeva*, de Nicéville, Butt. Ind. ii. p. 199 (1886).

“*Male.* Upperside olive-green, with darker submarginal band and inner portion of disc. Fore wing with oblique row of fine pale greenish-yellow spots from middle of costal margin; two small whitish subapical spots; space between discoidal marks and along outer margin yellowish. Hind wing with transverse tapering row of six pale greenish-yellow spots from costal margin to near abdominal angle, bounded below with pale yellow; two transverse

discocellular black lines; abdominal margin greenish grey. Underside greenish yellow, lighter and darker in portions, marked as above, discoidal markings on both wings, lower part of disc of fore wing with blackish patches.

“Expanse  $3\frac{1}{4}$  inches.” (*Moore, l. c.*)

I have received a number of male specimens from Omei-shan and Moupin.

Referring to its distribution, in India, de Nicéville (*l. c.*) observes that the range of *E. sahadeva* extends from Nepal to Shillong, and that it is decidedly a rare species. Elwes (*Trans. Ent. Soc. Lond. 1888, p. 357*) states that this species is rare in Sikkim.

### ***Euthalia pyrrha*, sp. nov.** (Plate XXI. fig. 4, ♀.)

*Female.* Dark olive-green. Primaries have an oblique yellowish macular band, somewhat similar to that of *E. confucius*; there are two yellowish or whitish subapical spots; a broad pale band on submarginal area is preceded by a blackish band and followed by a series of blackish lunules on the outer margin; the stigmata in discoidal cell and submedian interspace are outlined in black, and in shape are very similar to the same marks in *E. kardama*. Secondaries have the discoidal mark faintly outlined in blackish; the central band is indicated by three yellowish spots, surrounded with black below costa, and a blackish spot in each interspace to the first median, one or both of the last two with yellowish centres; submarginal band and marginal lunules as on primaries. Fringes black, chequered with white. Under surface yellowish green; markings on primaries as above, but the central band is white, and there is a patch of black in the submedian interspace below the termination of the band; the discal area is more or less suffused with blackish: secondaries have the central band represented by a series of six blue-tinted white spots, the fourth often small and sometimes absent, the second large and trigonate; submarginal band indicated by a series of dark green spots. Antennæ blackish above, reddish beneath; clubs black above, tipped with reddish.

Expanse 89–93 millim.

This species greatly resembles *E. kardama* on the under surface of secondaries, but the *confucius*-like band of the primaries at once separates it. In one specimen from Omei-shan the central band of secondaries is hardly represented on either surface.

Occurs in the Province of Kwei-chow and at Moupin and Omei-shan in June and July, but appears to be rare.

All the specimens that I have received, five in number, are females; and as these agree with the male of *E. sahadeva* in the antennæ and character of discoidal markings on both surfaces of the wings, I am inclined to think that *E. pyrrha* may ultimately prove to be the female of *E. sahadeva*, which occurs in the same localities and of which the female is unknown.

**Euthalia pratti.** (Plate XXI. fig. 5, ♀.)

*Euthalia pratti*, Leech, Entomologist, xxiv., Suppl. p. 4 (1891).

Agrees with *E. nara*, Moore, in coloration, but the character of marking more nearly resembles that of *E. patala*, Koll. The spots, rich cream in the male, white in female, forming the central fascia on primaries are smaller, and the last of the series is not elongated in the direction of anal angle, as it is in *E. patala*. On the under surface the fascia of secondaries terminates in the first median interspace, and is seen through from above in the form of spots. Expanse, ♂ 94 millim., ♀ 105 millim.

Appears to be a very scarce species. I have only received four specimens (2 ♂, 2 ♀) taken in June and July at Ichang and Chang-yang in Central China, and Chia-kou-ho in Western China.

**Euthalia thibetana.** (Plate XXI. fig. 8, ♂.)

*Adolius thibetana*, Poujade, Ann. Soc. Ent. Fr. 1885, p. ccxv.

*Euthalia staudingeri*, Leech, Entomologist, xxiv., Suppl. Jan. p. 4 (1891).

“Envergure du mâle, 72 mill., de la femelle 75 mill.—Voisin de *E. francia*, Gray.

“*Mâle*. Dessus vert olive légèrement bronzé, se fondant en brun noirâtre aux bords externes et contre la bande médiane. Cette dernière est, aux ailes supérieures, formée de larges taches jaune d’ocre internervurales, irrégulières, et commence un peu au-delà du milieu de la côte, oblique vers le bord externe, puis rentre vers la base de l’aile pour se contourner encore un peu avant d’atteindre le bord interne. Ces taches se continuent aux ailes inférieures en une bande presque droite, dentelée et coupée par les nervures, allant en pointe un peu au-dessus de l’angle anal. Entre ces bandes et les bords externes, une bande nuageuse noirâtre traverse les quatre ailes; aux supérieures, elle commence aux deux taches obliques situées aux trois quarts de la côte, puis contourne la bande jaune; aux ailes inférieures, elle est parallèle au bord externe. Cellule des ailes supérieures occupée par quatre lignes noires formant deux taches à peu près réniformes. Franges blanches entrecoupées de noir aux nervures.

“Dessous vert olive pâle, avec la répétition des taches et bandes du dessus.

“*Femelle*. Semblable, sauf le ton général, qui est moins chaud, et les bandes, qui sont d’un jaune blanchâtre.

“Trois individus, un ♂ et deux ♀, du Thibet oriental (province de Mou-Pin). Capturés par M. l’Abbé A. David.” (*Poujade, l. c.*)

Closely allied to *E. duda*, Staudinger\*, but the hind margin of primaries is hardly excavated; the ground-colour of all the wings is much greener, and the transverse markings are ochreous instead of pure white; the band on secondaries is narrower, terminates nearer the anal angle, and is not externally bordered with blue. The under surface of all the wings is greenish rather than blue, and the clubs of the antennæ are roddish brown beneath, and not tipped with black as in *E. duda*.

Expanse, ♂ 76–96 millim., ♀ 90–106 millim.

Occurs commonly up to 7000 feet in Western and Central China during the months of July and August.

\* ‘Exotische Tagfalter,’ p. 152, pl. 53 (1888).

In some of the male specimens the markings are creamy white, and in a few females they are pure white. The width of the bands is variable in both sexes; in one or two examples of the male the spots forming the band on primaries are very small, and the inner portions of the lower ones much suffused with the ground-colour. The bronze tinge on the primaries varies in intensity; one specimen has all the wings suffused with yellowish.

**Euthalia hebe.** (Plate XXI. fig. 7, ♂.)

*Euthalia hebe*, Leech, Entomologist, xxiv., Suppl. Jan. p. 4 (1891).

*Male.* Olive-green, suffused with yellowish. The yellowish central fascia is composed of seven more or less quadrate spots, the upper five of which are placed in a series running from middle of costa towards inner angle, and the last two are situated further in, and are directly under the third spot of the whole series; towards apex are three other yellowish spots, the first on the costa, and the last just above third spot of central series; the discal cell is crossed by two yellow bars, and clouded with yellow beyond termination of cell. Secondaries have a broad yellow central fascia terminating at the submedian nervure. Under surface pale sage-green; the markings as above, but those of primaries are bordered with black towards inner angle. Antennæ dark brown, tipped with black.

Expanse 80 millim.

I have two males from Chang-yang (native collector), and two from Omei-shan.

This species is unlike any *Euthalia* with which I am acquainted. The second and third subapical spots and the initial pair of central series are really the inner and outer portions of two longitudinal bars, whose centres are occupied by fuliginous clouds. It appears to be a very scarce insect.

**Euthalia omeia.** (Plate XXI. fig. 1, ♂.)

*Euthalia omeia*, Leech, Entomologist, xxiv., Suppl. Feb. p. 29 (1891); Grose Smith & Kirby, Rhopal. Exot. pt. xvii. (*Euthalia*) p. 8, pl. iii. figs. 3, 4, ♂ (1891).

*Male.* Pale yellowish brown, with olivaceous reflections; the markings are very like those of *Euthalia (Adolias) anyte*, Hewitson\*, but the outer edge of the central band is less indented; the second transverse band is nearer the outer margin, and there are no indications of any round spots on the space between these bands; below the median nervure is a large, ill-defined, triangular, fuscous-brown patch, limited externally by the central band, and extending upwards as far as the second median nervure. Secondaries brown, tinged with olivaceous, with a broad yellow patch occupying the costal half of the wing, but not quite extending to the outer margin. Under surface yellowish, the inner marginal area of secondaries tinged with green; the markings are similar to those of *E. anyte*, but there are no pale spots on the

\* Exot. Butt. vol. iii., *Adolias*, pl. ii. fig. 5.

primaries, and those on the secondaries are not well defined. Antennæ black, with the club broadly tipped with yellow above, and entirely fulvous beneath.

Expanse 70 millim.

Occurs at Omei-shan in June and July, also at Moupin and in the Province of Kwei-chow.

The broad yellow patch on secondaries at once distinguishes this species from its congeners.

**Euthalia consobrina.** (Plate XXI. fig. 3, ♀.)

*Euthalia consobrina*, Lecch, Entomologist, xxiv., Suppl. Feb. p. 29 (1891); Grose Smith & Kirby, Rhopal. Exot. pt. xvii. (*Euthalia*) p. 9, pl. iii. figs. 5, 6, ♀ (1891).

*Female.* Allied to *E. pratti*, Lecch, but more olivaceous; the macular band of primaries is more oblique: on the secondaries there are two dark transverse bands beyond the middle; the first not well defined, and near the costa edged with white; the second is parallel with outer margin, and broadest towards costa. Under surface similar to that of *E. patala*, Koll., but the spots forming the oblique band of primaries are smaller and differently shaped. Antennæ black; clubs broadly tipped with pale fulvous above, entirely fulvous beneath.

Expanse 76-88 millim.

Occurs at Omei-shan in June and July; also at Moupin and in the Province of Kwei-chow, Western China.

Although I have received a large number of specimens of this species, I have not been able to detect an example of the male sex, whereas of *Euthalia omeia*, which occurs in the same localities, no specimen of the female has yet been discovered. Notwithstanding the striking difference in colour and marking of the wings, the clubs of the antennæ and shape of discoidal markings, which I consider important characters in separating species of the genus *Euthalia*, agree; therefore it is possible that *E. consobrina* may be the female of *E. omeia*. However, until more conclusive evidence on this point has been obtained, I consider it advisable that they should remain separate.

Genus HESTINA.

*Diadema*, Section 6, *Hestina*, Westwood, Gen. Diurn. Lep. ii. p. 281 (1850).

*Hestina*, Felder, Neues Lep. p. 25 (1861); de Nicéville, Butt. Ind. ii. p. 55 (1886).

“Discoidal cell of both wings open. Second subcostal nervule of the fore wing arising close to the origin of the upper discocellular nervule.” (*Westwood, l.c.*)



“BODY moderately robust.

“HEAD moderately large, tufted in front, hairy above, usually marked with white spots.

“Eyes prominent, naked.

“Haustellum yellow.

“Palpi porrected, divergent, the tips convergent.

“Antennæ exactly half the length, or rather less than half the length, of the fore wing, terminating in a distinct gradually-formed club.

“Neck marked with small white spots.

“THORAX moderately robust, very hairy.

“Fore wings rather elongated, triangular. Costal margin moderately arched; outer margin slightly sinuate, emarginate, rather shorter than the inner margin; inner margin straight. First subcostal nervule in the typical species given off from the costal nervure some little distance before the apex of the cell; second just before the apex; third much nearer the origin of the fourth than to the apex of the cell, extending to the apex of the wing. In *H. persimilis* and its allies the first subcostal is given off a short distance before the end of the cell, the second at a considerable distance beyond, the third and fourth at about equal distances apart beyond the second. Upper discocellular nervule very small, outwardly oblique; middle about twice as long as the upper, inwardly oblique, forming the base of the lower discoidal nervule; lower entirely absent, thus leaving the discoidal cell open. Third median nervule moderately curved. Submedian nervure straight.

“Hind wings with the costal margin much arched at base, thence nearly straight, outer margin in the typical species forming an angle at the end of the second subcostal nervule, above and below which it is nearly straight, but sinuous; abdominal margin slightly excavated at the anal angle. Præcostal nervure simple, strongly bent outwards at the tip. Second subcostal and discoidal nervules given off from the costal very close together in the typical species, the latter sinuous. In *H. persimilis* they are given off much further apart, and the discoidal nervule is straight.

“ABDOMEN slender, somewhat long.” (*de Nicéville, l. c.*)

The typical species is the Chinese *H. assimilis*. “The genus is very closely allied to *Euripus*, and like *Neptis*, *Argynnis*, and *Cyrestis*, it comprises two groups, in which the position of the second subcostal nervule of the fore wing differs: in *H. nama*, which most nearly resembles the typical species, that nervule is given off before the end of the cell, in the other Indian species it is emitted far beyond the cell. These latter, which in this feature correspond with *Euripus*, and also more closely resemble it in colour and markings, are distinguished from *Euripus* by the more regular and less sinuate outline of the wings, the rounded, not linear, shape of the pale discal markings, and the colour of the haustellum.” (*de Nicéville, l. c.*)

**Hestina nama.**

*Diadema nama*, Doubleday, Ann. & Mag. Nat. Hist. (1) xvi. p. 232 (1845); Doubleday & Hewitson, Gen. Diurn. Lep. ii. p. 281, pl. xxxix. fig. 2 (1850).

*Hestina nama*, de Nicéville, Journ. Asiat. Soc. Beng. li. pt. ii. p. 58 (1882); Butt. Ind. ii. p. 56, pl. xxii. fig. 99, ♀ (1886).

“Fore wing with the outer margin sinuate, slightly glossed with purplish, especially towards the apex; with numerous semi-transparent markings of a bluish-white colour, viz. a longitudinal vitta in the cell at the base, followed by two spots, of which the outer one is triangular; above these three indistinct spots, the middle one sometimes wanting; between the lower median nervule and the submedian nervure two vittæ united at the base, the upper one followed by a round spot; above these, between the nervules, five vittæ, of which the one nearest the costa is pointed, the others bifid externally, each vitta followed by three spots, of which the lower ones are somewhat lunulate, the upper ones more rounded; four rounded spots near the apex, two near the anal angle. The inner margin is glaucous, the apex tinged with brown. Hind wing castaneous, darker in the female than in the male, with seven whitish subdiaphanous vittæ placed between the nervules, all, except the innermost, followed by a round white dot, beyond which the ground-colour of the wing is slightly darker; towards the outer margin a series of indistinct whitish spots, sometimes nearly obsolete. Cilia of both wings spotted with white. Underside: fore wing black, with strong blue reflections, the apex broadly chestnut, slightly bronzed towards the disc; the markings as above, but clearer, with two additional spots on the costa near the base. Hind wing paler than above, the white portions more or less irrorated with chestnut scales; on the margin a distinct series of whitish lunules. Head, thorax, and abdomen black, clothed with grey hairs; head above, and thorax below, spotted with white; abdomen below grey. Palpi black, spotted with white. Antennæ black.

“This species, which much resembles *Papilio agestor* and *Davias tytia*, has the cells of both wings open.” (*Doubleday, l.c.*)

Expanse, ♂ 92–98 millim., ♀ 98–112 millim.

Male specimens from Chia-kou-ho and Omei-shan have the secondaries blackish, with scarcely a trace of the typical castaneous colour, and consequently they bear some resemblance to *Caduga (Danais) melaneus*. The males from Wa-shan, and females from that and other localities in Western China, do not differ in any material respect from Indian specimens. The wings of the female are more ample, but I do not find that the sexes differ in marking.

I have only received this species from Western China, where it occurs at from 2000 to 6000 feet in July and August. It does not appear to be common.

In India *H. nama* “is common in the Eastern Himalayas, extending as far westwards as Kumaon, where, however, it is rare, and eastwards across the Brahmaputra into the Khasi and Naga Hills, and the mountain ranges of Upper Burma.” (*de Nicéville, l.c.*)

**Hestina assimilis.**

*Papilio assimilis*, Linn. Mus. Ulr. p. 300 (1764); Syst. Nat. i. 2, p. 782 (1767); Clerck, Icones, pl. 16. figs. 1, 2 (1764); Drury, Ill. Exot. Ent. i. pl. 17. figs. 3, 4 (1773); Cramer, Pap. Exot. ii. pl. 154. fig. A (1777).

*Hestina assimilis*, Kirby, Cat. Diurn. Lep. p. 227 (1871).

Primaries black, with pale greenish-white markings as follows:—a broad streak in the cell, often divided beyond the middle; two longitudinal bars beyond, the lower one triangular; a central transverse series of fine longitudinal bars varying in length, followed by almost round spots; submarginal and marginal series of smaller spots; two longitudinal bands in the submedian interspace united towards the base of the wing, and there is a streak along the basal half of the inner margin. Secondaries have the basal two thirds pale greenish white and the venation black; the outer third is black and contains a submarginal series of seven spots, of which the upper three are greenish-white and the others red, fifth and sixth with black centres; sometimes there is a small red spot internal to the third greenish-white one; marginal spots greenish white, small, and often obsolete towards anal angle. Thorax greenish white, with two black stripes; body greenish white, with black dorsal and lateral stripes.

Expanse, ♂ 82–90 millim., ♀ 100–113 millim.

The sexes do not differ in colour or marking.

This species occurs throughout China from Ningpo to Thibet, but is particularly common at Kiukiang in Central China. There appears to be no authentic record of *H. assimilis* having been found in Japan, although it has been reported to occur there. Dr. Fixsen (Rom. sur Léop. iii. p. 289) records it from Pung-tung in the Corea.

**Hestina mena.** (Plate XX. figs. 3, 4, vars.)

*Hestina mena*, Moore, Ann. & Mag. Nat. Hist. (3) i. p. 48 (1858).

*Hestina viridis*, Leech, Entomologist, xxiii. p. 32 (1890).

*Hestina nigrivena*, Leech, Entomologist, xxiii. p. 31 (1890); Grose Smith & Kirby, Rhopal. Exot. pt. xvi. (*Hestina*) p. 1, pl. i. figs. 1, 2 (1891).

“*Male*. Upperside pale greenish white; fore wing with all the veins broadly black; exterior margin black, with a marginal row of small spots, submarginal and third row of large and less distinct spots; hind wing with all the veins black, also a marginal row of ill-defined, black, lunular spots. Underside paler greenish white: all the veins of both wings less black than the upper-side, with an indistinct marginal row of spots. Body longitudinally striped black and white.

“Expanse  $3\frac{1}{2}$  inches.

“*Hab.* N. India. In British Museum Collection.

“Allied to *H. consimilis*, but may be distinguished by its larger size and by the absence of the broad, transverse, spotted bands.” (*Moore, l. c.*)

Var. *viridis*, Leech. (Plate XX. fig. 3, ♂.) *Male*. Pale greenish, neuration broadly black;

outer third of primaries black, its limit not well defined internally, enclosing a transverse series of large spots followed by smaller ones; these are of the ground-colour, and the last two of each series are linear. Secondaries have a marginal and submarginal series of ill-defined black spots; outer margin and fringes black, abdominal fold tinged with yellowish. Under surface whitish green; neuriation and some dashes between the nervules black; outer margin and fringes black; secondaries have the costa above the costal nervure and the abdominal fold yellow.

*Female.* Similar to the male, but the bar closing the discoidal cell of primaries is almost obliterated, the black of outer third is broken up into a double series of spots below apex, and the venation is less broad.

Expanse, ♂ 96 millim., ♀ 110 millim.

Two specimens from Chang-yang (male, June; female, July).

Allied to *H. assimilis*, but at once distinguished by the total absence of red markings.

Var. **nigrivena**, Leech. (Plate XX. fig. 4, ♂.) Whitish green; venation of primaries and a streak above the submedian nervure broadly blackish, as also is the median nervure of secondaries and its branches, but the other veins of these wings are narrow in comparison; outer fourth of primaries black, enclosing a double row of spots of the ground-colour; there is also an ill-defined blackish central transverse bar; on the secondaries there is a series of distinct black marginal spots and indications of a submarginal series: these last are placed in a very faint pinkish streak. Under surface—colour as above, but the venation is less broad, and the only distinct black spots are some small linear ones on the outer margins of all the wings; on the secondaries is a faint pinkish streak parallel with outer margin, most clearly defined at anal angle.

Expanse 78-90 millim.

Since describing *Hestina viridis* and *H. nigrivena*, the types of which were from Chang-yang, I have received a large number of specimens of *Hestina* from Western China, and have also examined the type of *Hestina mena*, Moore. Among the specimens from Western China is one which is exactly identical with the type of *H. mena*, and this example is but little different to the Central Chinese specimen which I described as *H. nigrivena*. Other specimens connect *nigrivena* with my *H. viridis*, consequently both these must be reduced to varietal rank.

Further examination of the specimen of *nigrivena* referred to by me as a female (Entom. xxiii. p. 31) discloses the fact that it is a male specimen with an abnormally large body. The females vary considerably in the width and intensity of the outer marginal border and neuriation. None of the male specimens last received have the yellow tinge on both surfaces of abdominal

fold, or the yellow costa on under surface of secondaries as in the type of *viridis*.

Occurs at Chang-yang in Central China, and at Moupin, Wa-shan, and Chia-ting-fu in Western China. It flies in June and July, and in Central China is found at an elevation of 6000 feet.

**Hestina subviridis.** (Plate XX. fig. 8, ♂.)

*Hestina subviridis*, Leech, Entomologist, xxiv., Suppl. p. 27 (1891).

*Hestina yankowskyi*, Grose Smith & Kirby, Rhopal. Exot. pt. xvi. (*Hestina*) p. 2, pl. 1. figs. 3, 4, ♂ (1891).

Resembles *Hestina assimilis*, Linn., on the upper surface, but there is no trace of red markings on the secondaries. On the under surface this species comes nearer to *H. nigrivena*, Leech (Entom. xxiii. p. 31), but the colour is greener; on the secondaries there is a black fold-line in submedian interspace; the venation of all the wings is narrower, and the basal portion of costal area is less conspicuously streaked with black. Head black, but not spotted with white; thorax and abdomen black, narrowly striped with whitish.

Expanse 79–82 millim.

This species varies in the amount of black on the upper surface of all the wings. The discoidal streak of primaries, more or less suffused with black, is generally divided into two parts, but sometimes this streak is entire, with a deep, or shallow, incision about the middle of its upper edge. On the under surface of some specimens the only dark markings are a black bar-like spot in the first median interspace of primaries and an indistinct transverse bar in the discoidal cell; the median nervure, and its first and second branches, of these wings are broadly black (*H. yankowskyi*, Grose Smith and Kirby, is of this form); in other specimens all the wings have grey-brown, broad, interrupted submarginal and narrower lunulated marginal bands; the primaries have a large square black spot in first median interspace enclosing a spot of the ground-colour and an interrupted oblique blackish streak from its upper edge to the costa.

Another form appears so distinct from either of those just referred to that I describe it as—

Var. **intermedia**, var. nov. Blacker than the type on upper surface, and the greenish-white markings are more clearly defined. On the under surface the primaries are black, marked with greenish white almost exactly as above; the secondaries are greenish white, with a large blackish patch from the middle of costa; a broad fuliginous submarginal band, in which are three or four white spots, and a broad lunulated marginal line of the same colour.

Expanse 75–78 millim.

Occurs at Moupin, Wa-ssu-kow, and Ta-chien-lu in June and July.

Some specimens of *H. subviridis* approach very closely to *H. zella*, Butler\*,

\* Trans. Ent. Soc. Lond. 1869, p. 9, ♂.

which may be a form of *H. persimilis*, whilst others are hardly separable from *H. japonica*, var. *chinensis*, Leech. Possibly all these may be referable to one exceedingly variable species extending from the N.W. Himalayas to Japan.

**Hestina japonica.** (Plate XX. figs. 5, 6, vars.)

*Apatura japonica*, Felder, Wien. ent. Mon. vi. p. 27 (1862).

*Euripus japonica*, Pryer, Rhop. Nihon. p. 23, pl. 5. fig. 8 (1888).

*Euripus japonicus*, var. *chinensis*, Leech, Entomologist, xxiii. p. 32 (1890).

*Diadema diagoras*, Hewitson, Exot. Butt. iii. (*Diadema*) pl. i. fig. 1 (1863).

“*Alis integerrimis, utrinque serpentino-fuscescentibus, maculis submarginalibus, lunulis angustissimis obsolete in margine, anticarum stria interiore maculisque undecim difformibus, posticarum costa, macula adjecta aliisque discalibus seriatis elongatis (quarta cellulari tribusque internis vittæformibus) albidis; antennis omnino nigris, palpis tomentose nigro squamatis. ♂.*”  
(Felder, l. c.)

“*Female.* Upperside dark brown, with numerous white spots. Anterior wing with a triangular and linear spot at the base; crossed obliquely before the middle by three large spots, beyond the middle near the costal margin by a trifid spot, and toward the outer margin by an irregular band of five spots, and nearer the margin by some indistinct minute white spots. Posterior wing with a spot near the base of the costal margin, a large longitudinal spot from the base to beyond the middle occupying the whole of the cell; crossed transversely at the middle by five spots, three between the longitudinal spot and the costal margin and two (one minute) between it and the abdominal fold (which is traversed by black nervures), and a linear spot parallel to it also white; a marginal and submarginal band of white spots.”  
(Hewitson, l. c.)

The form commonly found in Japan is that figured by Hewitson and Pryer.

I met with a form of *H. japonica* at Nagasaki and in the Provinces of Higo and Satsuma during the month of May which, as it differs considerably from the type, I describe as—

Var. *australis*, var. nov. (Plate XX. fig. 5, ♂.) Larger than the type. Ground-colour of all the wings greenish black; the white markings on both surfaces are larger, more extended, and distinctly cream-coloured; on the under surface of secondaries the marginal band is narrower than in the type and olive-brown in colour instead of purple-black. In one example this band is broken up into spots placed between the nervules.

Expanse, ♂ 96 millim., ♀ 108 millim.

I have not seen any examples of this form other than those taken by myself.

Var. *chinensis*, Leech. (Plate XX. fig. 6, ♂.) Differs from the type in the much smaller size of the white spots and streaks on both surfaces, and in having the basal spot, costal streak, and abdominal fold of secondaries yellow instead of white on the under surface.

Expanse 76–80 millim.

This form occurs at Moupin and Wa-shan, Western China, in June and July, and at a locality three days north of Ichang, Central China, in August.

I met with the typical form in Central Japan in July. It is also recorded from Yesso and North Japan by Mr. Pryer, who adds:—"This insect appears twice in the year, and may often be seen flying around trees, especially *Celtis* on which it feeds. Like *E. charonda*, it is very fond of frequenting the mouths of the burrows of *Cossus* and other destructive internal-feeding Lepidoptera and Coleoptera which so commonly attack the oak, chestnut, and willow trees in this country.

"The larva hibernates on the bark of the twigs of the tree, and is then grey, but as soon as the leaves appear in the spring it changes its skin and becomes green. It is of the usual *Apatura*, tapering, cylindrical shape, with strongly bifurcated head."

**Hestina oberthüri.** (Plate XX. fig. 7, ♂.)

*Hestina oberthüri*, Leech, Entomologist, xxiii. p. 32 (1890); Grose Smith & Kirby, Rhopal. Exot. pt. xvii. (*Hestina*) p. 3, pl. i. figs. 5, 6 (1891).

*Male*. Greyish white, venation broadly fuliginous; outer margins with broad fuliginous borders, that of primaries intersected by one, and of secondaries by two transverse rows of small spots of ground-colour. Under surface similar to above, but there is a bluish-black line on all the wings parallel with outer margin. Fringes white, chequered with black.

*Female* differs only from the male in the rounder contour of the wings.

In some male specimens the pale ground-colour is much suffused with fuliginous.

Expanse 76 millim.

This species bears a superficial resemblance to *Limenitis cottini*, Oberthür.

Occurs at Wa-shan and Moupin in Western China and at Chang-yang and Ichang in Central China. The female seems to be exceedingly rare, as I have only received one example of this sex among a large number of male specimens.

Genus EURIPUS.

*Euripus*, Westwood, Gen. Diurn. Lep. ii. p. 293 (1850); de Nicéville, Butt. Ind. ii. p. 15 (1886).

"BODY robust; hind wings deeply scalloped, with a very short truncated tail in the middle of the hind margin.

HEAD moderate-sized, hairy, scarcely tufted in front.

"Eyes large, prominent, naked.

"Palpi scaly, obliquely porrected, not elevated much higher than the middle of the eyes, porrected

to about half the length of the head; the tips converging, scaly, except at the base beneath and on the back of the terminal half of the second joint, which are hairy. Terminal joint small, ovate-conic.

“*Antennæ* strong, rather more than half the length of the fore wing, terminated by an elongated, rather slender club, the tip of which is slightly curved outwardly.

“*THORAX* elongate-ovate, robust, woolly, spotted with white in front.

“*Fore wings* elongate-triangular. Anterior margin not strongly arched; apical angle rather obtuse; apical margin about two thirds of the length of the anterior, very slightly scalloped, its anterior portion rather convex, but emarginate below the middle; anal angle strongly rounded. Inner margin equal in length to the apical one. Subcostal vein having the first branch arising at about one fourth of the length of the wing; second branch arising rather beyond half the length of the wing; third branch arising at about two thirds of its length, and extending to the tip; fourth branch arising halfway between the third and the tip, extending to the apical margin below the apex; terminal portion of the vein more oblique. Upper discocellular vein extremely short, transverse, arising at about one third of the length of the subcostal vein; middle discocellular very short, curved, forming the base of the lower discoidal vein; lower discocellular vein obsolete, so that the discoidal cell is open. Median vein strong, its third branch not strongly arched at the base.

“*Hind wings* subtriangular. Costal margin much arched at the base; outer margin deeply scalloped; the margin between the discoidal vein and the third median branch being somewhat elongated into a very short truncated tail. Precostal vein slightly oblique in a direction from the body, and forked at the tip. Subcostal vein branching near the base. The upper discocellular forming the straight base of the discoidal vein, and the lower discocellular obsolete, the cell being open.

“*Fore legs* of the male small, feathered, the tibia shorter than the femur, and the tarsus nearly equal to the tibia in length, exarticulate, and destitute of apical claws; annulated alternately with black and white hairs. Of the female about the same length as those of the male, more slender, and clothed with fine scales, the tarsus furnished with apical claws.

“*Middle and hind legs* strong; tibiæ and tarsi armed beneath with rows of minute spines; the middle pair longer than the hind ones; claws rather large, sickle-shaped, and very acute.

“*ABDOMEN* rather slender.” (*Westwood, l. c.*)

### **Euripus charonda.** (Plate XVI. fig. 8, var.)

*Diadema charonda*, Hewitson, Exot. Butt. iii. (*Diadema*) pl. i. figs. 2, 3 (1863).

*Euripus charonda*, Pryer, Rhop. Nihon. p. 22, pl. 5. fig. 6 (1888).

*Euripus coreanus*, Lecch, Proc. Zool. Soc. Lond. 1887, p. 418, pl. xxxvi. fig. 1, ♂ ♀.

“*Male*. Upperside dark brown, with numerous white and yellow spots; both wings from the base to the middle violet-blue. Anterior wing with a line of white from the base outwards; a bilobed spot within the cell and two large spots below it white; a transverse band of five spots beyond the middle, two spots near the apex, and a submarginal band of nine small spots, all pale yellow. Posterior wing with an indistinct spot at the base, two small spots and a large bifid white spot before the middle, followed by a curved transverse band of six pale yellow spots, by three minute spots towards the inner margin, by a submarginal band of



six spots, and by two or three small marginal spots near the apex, all pale yellow; a semi-circular carmine spot at the anal angle. Underside very pale green: anterior wing from the base to beyond the middle dark brown (black within the cell), with the spots as above, except that there is a white spot near the base, and three white spots between the bilobed spot in the cell and the transverse band; from the said band to the apex pale green marked by some ill-defined black spots; the outer margin with pale green lunular spots (one spot bifid): posterior wing pale green, with the spots of the upperside very indistinct.

“*Female*. Differs little from the male: it is larger, is on the upperside without the blue, has the spots more deeply tinted with yellow, and is without the anal carmine spot; on the underside it is more deeply tinted with yellow.

“*Expanse*, ♂  $4\frac{1}{2}$ , ♀  $5\frac{1}{10}$  in.” (*Hewitson, l. c.*)

Var. **coreanus**, Leech. (Plate XVI. fig. 8, ♂.) Wings of male dark brown, the basal half suffused with purple; a straight white streak, originating at the base of fore wing, traverses about one third of its width; a submarginal row of spots runs round all the wings, terminating at the anal angle in a bright carmine elongated spot; the discal area of both wings is traversed by two series of spots arranged irregularly, but concavely to the base of the wings, besides which there are two (sometimes three) spots near the apex of the fore wing and near the anal angle of the hind wing, situated inside the submarginal band. The two discoidal spots are often confluent. All spots situated on the purple colouring are pure white, those on the remainder of the wing pale yellow. Wings of the female dark brown, spotted as in the male; all the spots about the costa and disk of both wings white, the remainder pale yellow; anal lunule carmine. Underside of both sexes—fore wings black; costa, apex, and outer margin pale bluish-green, all markings of the upper surface reproduced: hind wings pale bluish green; veins very prominent, markings of the upper surface reproduced, mostly bordered with black; anal lunule carmine.

*Expanse*, ♂  $4\frac{1}{2}$ , ♀ 5 inches.

According to Pryer (*l. c.*) the typical form is not uncommon in Japan at Yokohama, Chichibu, and Yamato, but not easy to obtain in perfect condition. The same author adds:—“I have often seen several dozens in a day without being able to secure a single specimen. It is quite fearless, and the male has a favourite stand, often on the summit of a tall tree, from which it sallies forth and attacks any passing bird or insect, returning to its perch after it has chased the intruder away. Almost the only way to obtain it is to find an oak or chestnut which has been attacked by the boring *Cossus* or *Hepialus*, the fomenting sap from their burrows being very attractive to it. Each individual generally has its favourite tree, to which it descends to suck the flowing sap and fight the other insects which also crowd such attractive spots. Within the space of a few feet on the bole of a tree it may often be seen in company with two or three enormous Hornets and a crowd of *Lethe sicelis*, Stag- and other Beetles, which it buffets with its wings until its imperial claims are

acknowledged. If capture be missed the first time, patience is needed, as it will in the course of an hour or so surely return. It has a very large flat pupa, of a beautiful light green colour. I have had many broods of eggs, and have tried the newly-hatched larvæ with every possible tree, but could never induce them to feed."

I have taken *E. charonda* at Yokohama, Lake Biwa, and in the province of Kaga. The var. *coreanus* I found commonly in a large forest about fifteen miles south of Gensan, Corea, in July 1886; it frequents the tops of trees and is very difficult to take in good condition on account of its powerful flight. I received a good series of males from Chang-yang, Central China, and one example of the female from Moupin, Western China. These belong to the *coreanus* form.

### **Euripus funebris.** (Plate XVI. fig. 1, ♂.)

*Euripus funebris*, Leech, Entomologist, xxiv., Suppl. p. 27 (1891).

*Male.* Velvety blue-black. The outer half of primaries is greyish, and appears to be thinly clothed with scales; this is intersected by the bluish-black nervules, and some longitudinal bars of the same colour in the interspaces; there is a fairly broad crimson dash, sprinkled with black scales, from the base to the middle of cell. The outer third of secondaries has some greyish dashes between the nervules from the costa to third median. Under surface similar to above, but the greyish markings on outer half are stronger, the crimson dash is much wider and occupies nearly the whole of the basal half of the cell, a bluish bar crosses the cell, and there is a bluish spot in each median interspace and two in the submedian; at the base of the secondaries, which are more fuscous, but otherwise as above, is a circular crimson mark broken up into segments by the neuriation. Head black; collar white; antennæ black, tipped with dark brown; palpi and front tibiæ marked with white.

Expanse 115 millim.

One male specimen of this remarkable species was captured at Omei-shan in July.

### Genus SEPHISA.

*Sephisa*, Moore, Proc. Zool. Soc. Lond. 1882, p. 240; de Nicéville, Butt. Ind. ii. p. 45 (1886).

*Castalia* (Boisduval, MS.); Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 199 (1857).

"HEAD of moderate size, hairy. *Eyes* prominent, reddish, naked. *Antennæ* long, four-sevenths of the length of the fore wing, with a distinct gradually-formed club. *Haustellum* yellow. *Palpi* porrected obliquely, black above, pale below, clothed with thick short scales. *Thorax* robust, woolly. *Abdomen* rather small.

"FORE WING with the costa gently arched; outer margin emarginate below the apex and waved, a

little shorter than the inner margin, which is straight. Costal nervure reaching the margin about the middle of the costa; the first subcostal nervule given off from the subcostal nervure a short distance before the end of the cell, second a little beyond the end of the cell, the third given off nearer to the cell than to the base of the fourth, reaching the apex, fourth reaching the margin below the apex. Upper discocellular nervule very small, directed obliquely outwards; middle discocellular also very short, about three times the length of the upper, directed obliquely inwards; lower discocellular wanting, thus leaving the discoidal cell entirely open. Third median nervule moderately and evenly arched. Submedian nervure straight.

“HIND WING triangular-ovate, costa gently curved, outer margin sinuate, inner margin emarginate at the anal angle, deeply channelled to receive the abdomen. Præcostal nervure simple, strongly curved outwards. Discoidal cell open.” (*de Nicéville, l. c.*)

**Sephis princeps.** (Plate XIV. figs. 5 ♀, 6 ♀ var.)

*Apatura princeps*, Fixsen, Rom. sur Lép. iii. p. 289, pl. xiii. figs. 7 *a, b* (1887).

*Apatura cauta*, Leech, Proc. Zool. Soc. Lond. 1887, p. 417, pl. xxxv. fig. 2.

*Sephis princeps* ♀ et var. *albimacula*, Leech, Entomologist, xxiii. p. 190 (1890).

Primaries with a very deep indentation on outer margin. Ground-colour of all the wings light brown, with a purplish reflection in certain lights: primaries with a large irregular-shaped black patch extending from the base to about the middle of the wing, suffused down its centre with paler; beyond this patch is a circular black spot; a black double spot occurs in the cell, beyond which are two large black patches touching the costa; margins of all the wings black; an irregular black submarginal band runs round all the wings, dividing near the anal angle and enclosing two circular spots of the ground-colour; veins deeply marked with black, especially near the outer margins. Under surface—markings of primaries reproduced, with the addition of a whitish streak along basal half of costa and some whitish spots beyond cell and on the apical portion of outer area; secondaries—all the veins broadly marked with black: the ground-colour replaced over a great part of the surface by dirty white. Underside of the abdomen white.

The *female* agrees with the male, but the wings are rather more ample.

Allied to *Sephis* (*Castalia*) *dichroa*, Koll., and *chandra*, Moore, both Himalayan species.

Var. **albimacula.** (Plate XIV. fig. 6, ♀.) *Female.* Nearly all the fulvous markings replaced by white; the only spots of the typical colour are the two in discal cell of primaries and one on costa of secondaries, whilst below the median nervure of primaries there is a bluish longitudinal streak instead of a fulvous one. In size, shape, number, and position of the spots and dashes, this form agrees exactly with the female type.

This species occurs rather commonly at Chang-yang, and a few specimens have been taken at Omei-shan. Fixsen's types came from Pung-tung, in the Corea, and I also captured a specimen at Gensan in July. This latter is the example described by me as *A. cauta* in my paper on the “Butterflies of Japan

and Corea" (P. Z. S. 1887). While this paper was passing through the press, Vol. 3 of Romanoff's 'Mémoires sur les Lépidoptères' was received in London, including a paper by Fixsen, in which 93 Butterflies from the Corea are enumerated, and among them *Apatura princeps*, Fixsen, which is identical with my *S. (A.) cauta*.

### Genus HELCYRA.

*Helcyra*, Felder, Sitzb. Ak. Wiss. Wien, Math.-Nat. Cl., xl. p. 450 (1860); de Nicéville, Butt. Ind. ii. p. 45 (1886).

"HEAD small; eyes naked; antennæ medium, the club obtuse ovate. Palpi scaly, ascending, twice as high as the head.

"WINGS with the cells open.

"Fore wing with the subcostal nervure four-branched, the first branch in the middle of the cell, the second beyond the extremity of it, the third arising before the apex of the wing (and the fourth very short), the first discocellular rather long, longitudinal, and with the two discoidal nervules arising from the same point.

"Hind wing with the præcostal nervure emitted beyond the origin of the subcostal nervure.

"Genus with the neuration of the fore wing sufficiently distinct from that of other Nymphalinæ, perhaps allied to *Apatura*." (de Nicéville, l. c.)

### *Helcyra superba*. (Plate XX. fig. 2, ♀.)

*Helcyra superba*, Lecch, Entomologist, xxiii. p. 189 (1890).

Closely allied to *H. hemina*, Hewitson, but it differs from that species in the position and size of the black markings on upper surface. Nearly the whole of the apical half of the primaries is black, and this has its inner edge more deeply indented; the discal spots are two in number, but the larger is broadly linear. On the secondaries there are eight black spots, arranged one below the other in a transverse series; the second of these is the largest, and the first, third, fifth, and sixth are often faint and sometimes entirely eliminated; the submarginal line is broad and dentate throughout from costa to anal angle. Fringes white, preceded by a narrow fuliginous-grey line. Under surface shining white; apical and discal markings of primaries faintly showing through from above; on the secondaries is a transverse series of black lunules; those in the first subcostal and second median interspaces are followed by black spots edged internally with orange.

Expanse, ♂ 82-90 millim., ♀ 92-98 millim.

In a few examples there is, on the under surface of primaries, an orange-bordered black spot in the second median interspace.

Not uncommon in July at Chia-kou-ho, and has also occurred sparingly in the province of Kwei-chow and at Moupin.

## Genus APATURA.

*Apatura*, Fabricius, Illiger's Magazin, vi. p. 280 (1807); Westwood, Gen. Diurn. Lep. ii. p. 302 (1850); de Nicéville, Butt. Ind. ii. p. 48 (1886).

“**BODY** robust; wings of the males generally with a splendid purplish gloss, the anterior emarginate in the middle of the apical margin.

“**HEAD** of moderate size, larger in the males than in the females, hairy, slightly tufted in front.

“*Eyes* prominent, naked.

“*Antennæ* about equal to three fifths of the length of the fore wing, nearly straight; terminated by a rather strong elongate-ovate club, compressed and delicately keeled along the inside.

“*Maxillæ* long and spiral.

“*Labial palpi* porrected obliquely, the tip rising nearly to the level of the top of the eyes. Inner surfaces parallel, nearly united together, so as to form a conical beak nearly as long as the head, thickly clothed with short scales; the base beneath, the inner surface of the middle joint, and the terminal half of the upper surface furnished with elongated hairs the basal joint very short; second joint very long, slender, and curved; the third not longer than the basal joint, elongate-conic, pointed at the tip.

“**THORAX** robust, subovate, very woolly in front and behind.

“*Fore wings* elongate-trigonal; anterior margin moderately arched; apical angle subtruncate; apical margin more than two thirds of the length of the anterior, slightly scalloped, and more or less emarginate in the middle; inner margin nearly straight, a little longer than the apical one. Veins very strong; the costal one extending to the length of two thirds of the costa from the base; postcostal vein with the first branch arising a little before the anterior extremity of the discoidal cell; second branch arising at one third of the length of the wing, just before or exactly at the extremity of the cell; third branch arising just beyond the middle of the wing, and extending to the apical angle; fourth branch arising at four fifths of the length of the wing. Upper discocellular vein obsolete; middle discocellular arising at the anterior extremity of the discoidal cell, at the distance of one-third of the length of the wing from the base, very short, and forming the curved branch of the lower discoidal vein; lower discocellular vein obsolete, so that the discoidal cell is open.

“*Hind wings* triangular-ovate; the apical angle more or less elongated; outer margin scalloped. Inner margin deeply grooved to receive the abdomen, with a deep sinus between the body and the anal angle. Precostal vein strongly curved, its extremity directed outwards from the body. Postcostal vein branched at a short distance from its base. Discoidal cell not closed, the outer discocellular vein being obsolete.

“*Fore legs* of the male very short and slender, clothed with delicate white hairs. Tibia shorter than the femur. Tarsus about two thirds of the length of the tibia, very slender, and, when denuded of its hairs, four-jointed; the joints not indicated by short spines, and the apical joint very minute, simple, and destitute of apical claws. Fore legs of the female very slender and scaly. Femur within clothed with short white flossy hairs. Tarsus two thirds of the length of the tibia, nearly cylindrical, suboblique at the tip, and articulated, with short spines beneath indicating the joints.

“ *Four hind legs* moderately long, scaly. Tibiæ and tarsi finely spined beneath. Tibiæ of the middle legs shorter than the femora; those of the hind legs equal to them in length. Tibial spurs short. Claws, paronychia, and pulvillus of moderate size.

“ *ABDOMEN* small, elongate-conic in the males; more robust in the females.

“ *LARVA* naked, gradually attenuated behind; the head armed with two spines, and the tail with two obtuse points.

“ *PUPA* compressed at the sides; the back carinated, and the head bifid.” (*Westwood, l. c.*)

### ***Apatura schrencki.***

*Adolia schrenckii*, Ménétré, Bull. Acad. Pet. xvii. p. 215 (1859); Schrenck's Reisen, ii. p. 31, pl. iii. fig. 2 (1859).

*Apatura schrenckii*, Bremer, Lep. Ost-Sib. p. 19 (1864); Fixsen, Rom. sur Léop. iii. p. 292 (1887).

*Limenitis schrenckii*, Lang, Butt. Eur. p. 215 (1884).

*Euripus schrenckii*, Kirby, Cat. Diurn. Lep. p. 228 (1871).

“ *Alis* subdentatis, supra fuscis; anticarum fascia transversali obliqua, posticarum disco, albis; super marginem anteriorem maculis duabus fulvis: subtus, anticis basi violaceo-cærulescentibus posticis cinerascenti-argenteis, striga transversa extrorsum lunulata, margineque quatuor alarum fulvo-fuscis.” (*Ménétré, l. c.*)

“ *Wings* black; fore wings with central row of five white spots; between these and the inner margin is a dash of fulvous, and near the inner margin itself a patch of light blue. Hind wings with a central white patch bordered with blue or violet. Underside: fore wings black, variously spotted with white, blue, violet, light green, and orange. Hind wings pearly white, with a narrow orange band bordered with black, limiting the basal portion; hind margin with a similarly-coloured band throughout its entire length.

“ *Expanse* 3·0 to 3·10 inches.” (*Lang, l. c.*)

Staudinger (Rom. sur Léop. vi. p. 167) states that a preserved larva of this species, which Dörries brought from the Ussuri, greatly resembles a large larva of *A. ilia*; and Graeser\* says that a very large light-green *Apatura*-like pupa, found by Dörries on *Ostrya*, produced a male specimen of *A. schrencki*.

Occurs in Amurland. I obtained specimens at Gensan, Corea, and Fixsen also records the species from the same country. It does not appear to be common anywhere.

This interesting species appears to have more characters in common with *Apatura* than with any other genus.

On the under surface it bears a great resemblance to *Apatura chevana* Moore.

\* Berl. ent. Zeit. 1888, p. 82.

**Apatura chevana.** (Plate XVI. fig. 6.)

*Athyma chevana*, Moore, Proc. Zool. Soc. Lond. 1865, p. 763, pl. xli. fig. 1.

*Apatura chevana*, de Nicéville, Butt. Ind. ii. p. 52 (1886).

“*Male*. Upperside dark brown; markings pale buff-yellow. Fore wing with uninterrupted discoidal streak, terminated by two oblique spots; a transverse discal series of irregular-shaped spots, a submarginal row of small spots, and indistinct marginal narrow streaks. Hind wing with a broad transverse band, a submarginal lunulated band, and indistinct marginal narrow streaks. Body with pale buff-yellow waist-band and abdominal rings. Underside: fore wing with the markings as above, the interspaces ferruginous brown, suffused with dark brown posteriorly, except along the base of the costa and triangularly before the apex, which is pale nacreous blue: hind wing with a narrow transverse discal and marginal ferruginous-brown band, the rest of the wing pale nacreous blue, the broad transverse and lunulated submarginal band being paler nacreous white; a black dot on lower part of disk.

“Expanse  $2\frac{1}{2}$  inches. Darjeeling.”

“The whole underside of this species is very similar to that of *Apatura ambica*; and Mr. W. S. Atkinson has informed me that in fresh-captured specimens the upperside has also the beautiful reflected purple gloss visible in that insect.” (*Moore, l. c.*)

The purple reflection on the primaries, referred to by Mr. Moore, is very well exhibited in all my Chinese examples of the male. In the female the upper surface is not shot with blue and the transverse markings are broader and pale straw-coloured.

The under surface of this species bears a remarkable resemblance to that of *Apatura (Adolias) schrencki*.

Occurs at Moupin in Western China and at Chang-yang in Central China, but is not common at either place.

Referring to its distribution in India, de Nicéville (*l. c.*) says: “A rare species in Sikkim; the Indian Museum, Calcutta, possesses specimens from the Naga Hills and Sibsagar in Upper Assam.”

**Apatura nycteis.**

*Athyma nycteis*, Ménériés, Schrenck's Reise, pt. i. p. 28, pl. ii. fig. 11 (1859).

*Neptis nycteis*, Fixsen, Rom. sur Lép. iii. p. 295 (1887).

*Athyma cassiope*, Ménériés, op. cit. p. 27, pl. ii. fig. 10.

*Apatura nycteis*, Staudinger, Rom. sur Lép. vi. p. 170 (1892).

“*Alis subdentatis, fusco-nigris; fasciis duabus communibus externa punctis, linea longitudinali integra, albis: subtus, alis fulvo-virescentibus, anticis basi albis, puncto nigro, macula sub angulo interiore violaceo-nigra; posticis bifasciatis, inter illas 4-6 punctis argenteo-virescentibus.*

“*Enverg. 2 po. 6 lign.*” (*Ménériés, l. c.*)

Graeser (Berl. ent. Zeit. 1888, p. 82) describes the early stages of this species as follows :—

“*Larva*. Of the usual *Apatura* shape. Dark green, with paler oblique streaks on the sides ; there are two pointed wart-like projections, each furnished with several sharp spiny hairs, on the back of the 6th–12th segments ; those on the 6th, 8th, and 11th longer and thicker than those on other segments ; the anal segment terminates in two rather long sharp points. The head is marked with reddish-brown stripes, and the very long projections, which are directed forward, have roundish knobs and bear a few obtuse accessory spines. On the upperside of the larva, as far as the bluish-green spiracles, there are a number of short spines, which are longest and closest together on the sides of the head ; the area below the spiracles is covered with fine yellowish hairs. Feeds in June on elm (*Ulmus*).

“*Pupa*. Whitish green, differing only from the pupa of *A. ilia* or *A. iris* in having a series of obtuse elevations on the sharply ridged upperside of the body.”

Dr. Fixsen (*l. c.*) records seven male specimens taken by Herz in the Corea, and states that they are larger and finer than Amurland examples. Dr. Staudinger, however, appears to consider that the species does not occur in the Corea, as he says (Rom. sur Léop. vi. p. 120) that *A. nycteis* is peculiar to Amurland. I have not seen specimens of the species from any part of the region treated of in the present work ; the only specimens I have are from Amurland, where the types were taken by Maack.

According to Staudinger, *A. cassiope*, Ménétrics, is nothing but a remarkable aberration of *A. nycteis*.

### ***Apatura subcærulea*. (Plate XV. fig. 1, ♀.)**

*Apatura subcærulea*, Lecch, Entomologist, xxiv., Suppl. Feb. p. 9 (1891) ; Grose Smith & Kirby, Rhopal. Exot. pt. xix. (*Apatura*) p. 2, pl. i. figs. 3, 4, ♀ (1892).

*Male*. Primaries fuliginous, basal half tinged with greenish ; the central yellowish-white fascia is represented by three spots below costa and three below second median nervule ; the submarginal band is indicated by some yellowish-white spots ; the largest of these are placed in the subcostal and median interspaces ; in the first median interspace there is also a round but obscure black spot ; some fulvous spots towards anal angle. Secondaries fuliginous, tinged with green over the basal three fourths ; on the outer limit of this green suffusion are some fulvous spots, most distinct towards costa, and a black spot towards anal angle ; the pale outer margin is interrupted at the nervules with fuliginous and intersected by a transverse fuliginous line. Under surface whitish blue : primaries are clouded with fuscous along the inner margin and on central area, and the markings of upperside are reproduced ; the secondaries are traversed by a silvery-white fascia (faintly showing through on the upperside), bordered internally with pale ochreous brown and an external suffusion of the same colour ; the spot above anal angle has a pale centre, and is ringed with pale fulvous ; a pale ochreous-brown line, parallel with outer margin, is preceded by a silvery band.

Expanse, ♂ 88 millim., ♀ 100 millim.



*Female.* Similar to the male, but the secondaries have a distinct whitish central fascia, which is almost straight, and becomes attenuated towards anal angle.

Occurs at Omei-shan, June and July, and also in the Province of Kweichow.

On the upper surface the female of this species has a great likeness to the same sex of *A. iris*, but the band on secondaries and greenish suffusion on all the wings distinguish it at once.

***Apatura pallas.*** (Plate XV. fig. 5, ♂.)

*Apatura pallas*, Lecch, Entomologist, xxiii. p. 190 (1890).

*Male.* Blackish brown, with black, white, and pale fulvous markings. Primaries thickly sprinkled with fulvous scales on basal third, beyond which is a transverse series of four fulvous spots preceded by an irregular black band; the spot nearest the costa is darker than the others, and is followed by a large triangular black spot; there are three fulvous spots at outer extremity of discal cell, and below these a fulvous spot in each median interspace,—that in the first has a whitish centre, the other is preceded by a round black spot, before the apex there are two whitish spots (the upper one is round), the spots forming the submarginal series are fulvous, but not well defined towards costa. Secondaries: basal half clothed with silky grey-brown hairs, and limited by a fulvous transverse interrupted band; the inner portion of this band becomes indistinct after passing the second median nervule, but the outer, though most broken up, is continued to the first median nervule, enclosing a well-defined black spot in nervular interspace; a black band, broad towards costa and tapering towards anal angle, precedes a fulvous submarginal band which is intersected by the nervules, as also is a broad fulvous line on outer margin. Fringes white between the nervules. Under surface pale olive-green; the markings of primaries are as above, but the fulvous gives place to white or whitish, and the black spot in second median interspace is encircled with fulvous: secondaries pale olive-green; basal area washed with greyish, and bounded by an olive-brown transverse tapering band; from the inner edge of this band, which is broadly bordered with silvery white, a spur runs inwards and upwards above the median nervule; there is a well-defined ocellus on the second median interspace, and above it is a series of silvery-white spots: the interrupted submarginal band is of the same colour, as is also a fainter line which traverses the pale olive-brown outer margin.

Expanse 78 millim.

One male specimen taken at Chia-kou-ho, in July, at an elevation of 1700 feet.

On the upper surface this species is not unlike *A. iris*, var. *bieti*, Oberthür (Etud. d'Ent. xi. p. 18, pl. iii. fig. 15), but the fulvous spots are much paler, and the black spot on primaries is not ocellated and is less conspicuous; the fascia on secondaries is narrower, and has the inner edge curved, and there is no purple reflection on these wings. On the under surface *A. pallas* is quite

unlike any species of the genus with which I am acquainted, but the markings of secondaries bear a superficial resemblance to those of *Argynnis paphia*.

***Apatura subalba*.** (Plate XV. fig. 3, ♂.)

*Apatura subalba*, Poujade, Ann. Soc. Ent. Fr. 1885, p. ccvii; Leech, Trans. Ent. Soc. Lond. 1889, p. 108.

“Envergure: 65 mill.—Dessus d'un brun clair. Ailes supérieures en triangle rectangle allongé, à peine dentées, ayant quatre taches blanches arrondies: l'une aux deux tiers du bord costal, suivie d'une autre se dirigeant obliquement vers le bord externe, les autres parallèles aux deux premières et situées presque au milieu de l'aile; une cinquième, à peine marquée, est placée sur la nervure sous-médiane, immédiatement au-dessous de la tache centrale. Ailes inférieures à bord externe presque droit, assez fortement denté, bordé d'un liséré brun foncé nuageux, parallèle aux denticulations; bord costal orné, au dernier tiers, de deux taches blanches superposées.

“Dessous d'un blanc soyeux, à reflets irisés; une tache brune, à peu près de la forme du chiffre 2, surmontée d'un point de même couleur, est située presque à l'angle interne de l'aile supérieure; les taches blanches du dessus apparaissent en blanc mat.” (*Poujade, l. c.*)

The type, a small female in very poor condition, is in the Paris Museum. It was taken by Abbé David in Moupin. The male has rather sharper primaries, otherwise the sexes do not differ.

In some examples of both sexes the white spots of costal area on upper surface of secondaries are either faint or entirely absent. On the under surface of the secondaries of one specimen there is a large C-like spot, outlined with black, at anal angle and a blackish spot above it in the first median interspace.

Occurs in Western China in June, July, and August, and has been received from Wa-shan, Chia-kou-ho, Moupin, and Huang-mu-chang. In Central China it has been found at Kiukiang in May and June, and at Ichang and Chang-yang in July.

Although it seems to be widely distributed, this species does not appear to be anywhere common.

***Apatura fulva*.** (Plate XV. fig. 2, ♂.)

*Apatura fulva*, Leech, Entomologist, xxiv., Suppl. p. 30 (1891); Grose-Smith & Kirby, Rhopal. Exot. pt. xix. (*Apatura*) p. 2, pl. i. figs. 5, 6, ♂ (1892).

*Male*. Pale fulvous, with brownish markings. Primaries have a large blackish-brown patch at end of discoidal cell, and a round spot of the same colour in first median interspace; there are two pale spots in the apical third, which is fuscous brown; a band of the same colour is continued along the outer margin, but terminates just beyond the first median interspace, and

there are clouds of the same between the two dark brown spots and in the submedian interspace, uniting at the inner angle with a fuscous cloud, which extends along the inner margin. Secondaries have a dark brown spot in first median interspace, and the fuscous-brown outer marginal border is intersected by a transverse band of the ground-colour. Under surface pale fulvous. All the markings of primaries are faintly reproduced, with the exception of the round spot in first median interspace, which is very distinct and has a bluish dot towards its outer edge: the secondaries have the marginal markings of upperside faintly reproduced, but there is also a broad reddish transverse central line followed by a series of pale blotches; the ocellus is distinct and has a bluish centre.

Expanse 78 millim.

This species has been received from Omei-shan and the Province of Kwei-chow in Western China.

*A. fulva* is allied to *Potamis* (or *Apatura*) *ulupi*, Doherty (Journ. Asiat. Soc. Beng. lviii. p. 125, pl. x. fig. 2, 1889), a species occurring on the eastern frontier of Upper Assam.

### **Apatura fasciola.** (Plate XVI. fig. 2, ♂.)

*Apatura fasciola*, Leech, Entomologist, xxiii. p. 33 (1890); Grose Smith & Kirby, Rhopal. Exot. pt. xix. (*Apatura*) p. 1, pl. i. figs. 1, 2, ♂.

Dark fuscous brown. Primaries edged with yellowish along the costa to beyond the middle, and tinged with the same colour on outer margin; the central area is traversed by a yellow band composed of seven spots, of which the two nearest costa are smaller and the next pair larger than the other three; a white spot towards apex. Secondaries with a central transverse yellow band extending from costa to submedian nervure, and interrupted by the nervules: the outer margin is yellow, tinged with fuscous, and intersected by a transverse line of the ground-colour, a black spot above anal angle. Under surface opalescent, clouded with tawny on the outer margin of all the wings; the primaries have a bluish-white spot near apex, below this are three small dots of the same colour and a black dot set in a tawny ring; secondaries with a well-defined ocellated spot near anal angle, and a series of small spots above: the basal half of all the wings is darker than the outer half, and separated by a tawny transverse line, most clearly defined on the secondaries.

Expanse, ♂ 74 millim., ♀ 82 millim.

Occurs at Chang-yang, Central China, in July and August, and also at Omei-shan, and in the Province of Kwei-chow, Western China.

The outer margin of primaries is more concave and the anal angle of secondaries more produced in the male; but the sexes are alike in colour and markings. Mr. Grose Smith's figure of this species appears to me to represent a female, which sex seems to be oftener met with than the male.

**Apatura iris.** (Plate XV. fig. 4, ♀ var.)

*Papilio iris*, Linnæus, Syst. Nat. i. 2, p. 775 (1767); Esp. Schmett. i. 1, pl. 11. fig. 1 (1777); i. 2, pl. 71. fig. 4 (1781); Hübn. Eur. Schmett. i. figs. 117, 118 (1794?).

*Apatura iris*, Lang, Butt. Eur. p. 156, pl. xxxiv. fig. 2 (1884).

*Apatura iris*, var. *bieti*, Oberthür, Bull. Soc. Ent. Fr. 1885, p. cxxxvi; Etud. d'Entom. xi. p. 18, pl. iii. fig. 15 (1886).

“Expands 2·25 to 3·25 inches. Fore wings dark brown, with ten white spots arranged as follows:—one oval-shaped spot rather larger than the rest in the centre of the wing, and below this is a crescentiform spot with its convex side turned outwards, and then below this and nearly touching the inner margin a small round one; external to these and near the hind margin are two round spots placed one above the other; above and internal to these last are three costal spots placed one above the other, and external to them two small ones close to the apex. Hind wings with a broad white band running across their centre from the costa to the inner margin, broadest at its costal end, and becoming gradually narrow towards the inner margin; on its inferior edge is a spur-like projection just where the band crosses the discoidal cell; near to the anal angle is an orange ring, the centre of which is black or bluish; the anal angle itself is marked with orange. The wings in the male are short, with rich violet, excepting along the hind margins, which are brown, sometimes slightly tinged with fulvous. Underside of all the wings light brown, with white bands and spots arranged as on the upper surface. The fore wings are strongly tinged with reddish orange towards the costa, and towards their centre is a black spot with a bluish pupil and surrounded by an orange ring: the hind wings are tinged with reddish brown along the edges of the white band, and at the anal angle is a round black spot with a bluish pupil. The clubs of the antennæ are black without orange tips.

“*Larva*. Green, slightly bluish towards the ventral surface, studded all over with minute yellow spots, each segment having a yellow line running upwards and backwards in an oblique direction. The head, which is flattened in front, has a pair of horn-like appendages, which are not retractile, and in colour are dark green in front and lighter posteriorly.” (*Lang, l. c.*)

Feeds on *Salix*.

Var. *bieti*, Oberthür. (Plate XV. fig. 4, ♀.) *Male*. Brownish black, faintly shot with purple in certain lights. The base, sometimes the whole surface, of all the wings thickly powdered with fulvous scales; the central band is formed as in typical *iris*, but is fulvous in colour, and the costal portion composed of spots which are uniform both in size and shape; there are usually three spots towards apex, the upper two white, sometimes tinged with fulvous, the lower one generally fulvous; the black spot on the first median interspace has a bluish centre and is broadly bordered outwardly with fulvous, in some specimens this spot is also inwardly edged with fulvous. Secondaries have central and submarginal bands as in the type, but the former is narrower, and both are fulvous; there is a broad interrupted band of the same colour between them; the black spot towards anal angle has a bluish centre. Under surface as in typical *iris*, except that the ocellus on primaries is broadly ringed with fulvous, enclosing and partly obscuring the two usual white spots; band on secondaries very slender below costa.

*Female*. There are two forms of this sex. In one all the markings, except the subapical spots, are yellowish; in the other the markings, excepting the submarginal band of secondaries,

which is dull ochreous, are white. The spots forming costal portion of central band on primaries and the band of secondaries differ in appearance from those of female *iris* in the same way that they do in the males of these two forms.

This form, which appears to stand in the same relation to *A. iris* that *clytie* and other brown forms do to *A. ilia*, occurs at Ta-chien-lu, Wa-shan, Ne-tou, Wa-ssu-kow, Che-tou, Chia-ting-fu, in Western China, and at How-kow in Thibet. It flies in June and July, and is found up to 10,000 feet.

Males of the typical form from China are rather larger than average European specimens, and the under surface is deeper chocolate. The majority of the females are typical, but a few specimens from Chang-yang and Pu-tsu-fong have the usual white markings, with the exception of the subapical spots, replaced by yellow. According to Staudinger (Rom. sur Lép. vi. p. 168) this form also occurs in Amurland and occasionally in Germany. M. Oberthür records *A. iris* from the Isle of Askold, and observes that the specimens from that locality do not differ from French examples of the species (Etud. d'Entom. v. p. 17).

Generally distributed in Western China, and is not uncommon at Chang-yang in Central China. Abundant in many parts of South-western and Central Europe, and is also found in Asia Minor and the Amur.

### **Apatura ilia.**

*Papilio ilia*, Wien. Verz. p. 172 (1776); Hübner, Eur. Schmett. i. figs. 115, 116 (1794); figs. 809, 810 (1824-1826).

*Papilio iris*, Esper, Schmett. i. pl. xi. fig. 2, ♀ (1777); pl. 37. fig. 1, ♂ (1778).

*Apatura ilia*, Lang, Butt. Eur. p. 157, pl. xxxv. fig. 1 (1884).

*Papilio clytie*, Wien. Verz. p. 321 (1776); Hübner, Eur. Schmett. i. figs. 113, 114 (1794?); Lang, l. c. pl. xxxv. fig. 2, ♀.

*Apatura metis*, Freyer, Beitr. ii. pl. 67, fig. 1 (1829); Herr.-Schäff. Schmett. Eur. i. figs. 539-541 (1851-1856); Lang, l. c. pl. xxxv. fig. 3.

*Apatura bunea*, Herrich-Schäffer, Schmett. Eur. i. figs. 161-164 (1844); Lang, l. c. pl. xxxv. fig. 4.

*Apatura substituta*, Butler, Cist. Entom. i. p. 159 (1873).

*Apatura ilia*, var. *substituta*, Pryer, Rhop. Nihon. p. 22, pl. 5. fig. 9, ♂ (1886).

“Expands 2.0 to 2.50 inches. The typical form of this species is very similar to *iris* at the first glance, but on examination will be found to present many important differences; the chief points of distinction are:—1. The presence in both sexes of an orange ring on the upper surface of the fore wings near the anal angle. 2. The white fascia of the hind wings has not, as in *iris*, a spur-like projection, but is nearly straight on its outer edge. 3. The underside will be seen to differ in the distinctness of the markings, and the hind wings are delicately

tinted with bluish pink or grey, especially along the hind margins. 4. The hind margins are much more indented in the female of this species than in that of *iris*. Lastly, the clubs of the antennæ are tipped with yellow or orange." (*Lang, l. c.*)

"*Larvâ*. Very similar to that of *iris*, but somewhat smaller and of a yellowish colour, except on the ventral surface. The cephalic horns are bordered with yellow. Feeds on *Salix* and several kinds of *Populus*, chiefly *Populus alba*.

"*Pupa*. Somewhat rounder than that of *iris*, and less pointed anteriorly." (*Lang, l. c.*)

Typical specimens of *A. ilia* are either exceedingly local or of very rare occurrence in Eastern Asia. I took one example at Gensan, Corea, in July 1886, and M. Oberthür (*teste* Elwes, P. Z. S. 1881, p. 892) says that specimens from Askold do not differ from the French type.

Var. **substituta**, Butler. "*Male*. Nearly allied to *A. ilia*, differs above in the brighter purple shot, the broader trifold tawny band beyond end of cell in primaries, and the less lunate character of the submarginal tawny spots of all the wings; the discal series of black spots in secondaries obsolete; the whole disc between the tawny bands being black-brown; the central band sharply angulated externally, more so even than in *A. iris*: wings below more brightly coloured than in *A. ilia*, all the white bands broader; the central band of secondaries as above, but white with a faint rosy shot; submarginal interrupted lilacine lunate band prominent; discal spots of secondaries not so well defined. Expanse of wings, 3 inches 2 lines." (*Butler, l. c.*)

*Female*. Similar to the male, but the bands are wider and the spots larger, and the primaries are not shot with purple.

This form occurs in Central and Northern Japan, Yesso, N. China, at Gensan in the Corea, and according to Dr. Staudinger in Amurland.

Pryer states that the insect "delights in flying round the tops of tall willow trees [on which the larva feeds], now and again descending to moist spots in the roadway or settling on the leaves of its favourite tree. The green pupa mimics a young willow leaf, both in shape and colour. It [the imago] varies greatly in intensity of colour according to locality, and is more abundant on the mountains than on the plains."

*A. ilia* occurs in one or other of its various forms throughout the greater part of Europe, Asia Minor, and Northern and Eastern Asia.

Fixsen (Rom. sur Lép. iii. p. 292, 1887) records var. *metis*\*, and also var. *bunea*†, from the Corea.

\* Smaller than the type; bands and spots orange or yellow instead of white.

† Similar in shape to *metis*, but the bands and all the spots, except those on marginal area, are white.

**Apatura here.** (Plate XV. figs. 8, ♂, 7, ♂ var.)

*Apatura here*, Felder, Wien. ent. Mon. vi. p. 27 (1862).

*Apatura ilia*, var. *here*, Kirby, Cat. Diurn. Lep. p. 260 (1871).

*Apatura ilia*, var. *serarum*, Oberthür, Etud. d'Entom. xv. p. 11, pl. i. fig. 8, ♂ (1891).

“Alis dilute fulvis, ♂ris supra in certo situ vivide lilacino nitentibus, anticis punctis quatuor cellularibus, fascia refracta maculisque quinis exterioribus albidis, plus minus fulvo tinctis, ultima nigro pupillata, posticis fascia lata discali concolore, introrsum levissime sinuata, supra maculis exterioribus grossis fuscis, penultima ocellari. ♂♀.

“Japonia. Ning-po. Shanghae.—Proxima affinis elegantis speciei est *A. ilia*, Wien. Verz., var. *iris rubescens*, Esp. (*Keos*, Meigen). Ab hac et forma ejus latefasciata (*i.e.* maculas exteriores alarum posticarum valde abbreviatas gerente) in regione Amurensi proveniente constanter differt terminatione interiore fasciæ alarum posticarum. A vena costalis enim usque ad venam discoidalem valde oblique currit et inter hanc et venam medianam levissimum sinum, minime autem angulum ut in *Ap. clytie*, exhibet. Mas facilius dignoscitur quam femina. Specimen masculinum japonicum dilutius coloratum et chinensibus minus.” (*Felder, l. c.*)

The female of *A. here* has been figured by Oberthür (*l. c.*) as *A. ilia*, var. *serarum*, ♂. He mentions Hou-pé and Yunnan as localities for the species. I have only received typical *A. here* from Kiukiang and Ship-y-shan in Central China. The form occurring at Chang-yang, Central China, and various places in Western China, exhibits certain constant and well-defined differential characters, and I therefore describe it as—

Var. **phædra**, var. nov. (Plate XV. fig. 7, ♂.) *Male*. Ground-colour darker, all the white markings are broader and more clearly defined; the band on secondaries extends from costa to just below first median nervule, where it terminates, and is of uniform width and almost straight; submarginal and marginal series of white spots. Under surface as in *A. here*, but more suffused with lilacine, and, as on the upper surface, the bands and spots are broader and clearer white; the internal edge of the band on secondaries is only angulated in its upper portion.

*Female*. Has the white markings of the male of this form; the ground-colour, however, is similar to that of *A. ilia*, but paler. It differs from the female of *A. ilia*, var. *serarum*, Oberthür, in having the three white spots beyond cell of primaries more distinctly separated; the submarginal band of secondaries narrower, and on the under surface of primaries there is a linear white spot connecting the upper and lower portions of central band.

Expanse, ♂ 80 millim., ♀ 92 millim.

This form occurs in July and August at Ta-chien-lu, Omei-shan, Pu-tsu-fong, Chia-kou-ho, and Chow-pin-sa in Western China, and at Chang-yang in Central China.

*A. here* has been generally considered to be a form of *A. ilia*, and at one time I also held this view; but now that I have a long series of this species as well

as an excellent coloured drawing of the type of *A. here* in Baron Felder's collection, kindly sent to me by Dr. Rogenhofer, I find that although it is certainly very similar to *A. ilia*, var. *substituta*, Butl., in some respects, it is nevertheless quite distinct from that species, as will be seen by the figure.

As *A. here* does not seem to occur in Japan, Baron Felder's locality is probably erroneous; possibly the specimen referred to by him may have been an example of *A. ilia*, var. *substituta*, Butl.

***Apatura laverna*, sp. nov.** (Plate XV. fig. 6, ♂.)

*Male*. Primaries black, with fulvous markings as follows:—A discoidal streak enclosing four black spots, and a similar streak in the submedian interspace but without black spots; beyond the acute extremity of each of the streaks are three spots representing the upper and lower portions of a central band; submarginal band composed of seven spots, of which the sixth is very large and centred with black, the fifth is also large and sometimes centred with dusky; marginal macular band narrow, except below the first median nervule where it is considerably dilated. Secondaries fulvous, with the neuriation black and abdominal fold pale greyish, broadly bordered above with dark grey; the basal area is defined by a blackish transverse line, which is much diffused inwardly towards costa, there are two black discoidal spots; central band blackish; submarginal band black, broadest in the middle, and tapering towards the apex of costa and the anal angle; outer margin narrowly bordered with black. Under surface fulvous, clouded with olive-grey: primaries have four black spots in the cell placed on a pale patch; the central band is represented by spots as on upper surface, white in colour, and bordered inwardly with brownish especially towards inner margin; there are two pale subapical spots and a brownish submarginal band, the latter terminates in a blackish spot in submedian interspace and forms the internal boundary of a greyish transverse patch in the outer margin; there is a black spot centred with pale bluish grey in the first median interspace: secondaries have the basal half light olive-brown tinged with lilacine, the outer edge of this area is curved and slightly indented; apical area of the wing clouded with fulvous; central band broad, lilacine, bordered outwardly with light olive-brown; submarginal band brown, indistinct towards costa but well defined, and outwardly bordered with lilacine below the third subcostal nervule, there is a leaden-grey spot on the inner edge of this band in each median interspace.

Expanse 68–70 millim.

In some respects this species is similar to *A. here*, but may be distinguished on the upper surface by the fulvous streaks in cell and submedian interspace, and on the under surface by the differently-formed outline of the basal area of secondaries.

Occurs at Pu-tsu-fong, Wa-ssu-kow, and Omci-shan in June and July, at elevations ranging from 4000 to 10,000 feet.



## Genus DILIPA.

*Dilipa*, Moore, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 201 (1857).

“ Differs from typical *Apatura* in having the discoidal cell closed in all the wings by a very delicate lower discocellular vein ; the palpi and antennæ are, however, like those of *Apatura*.”  
(*Moore, l. c.*)

***Dilipa fenestra.*** (Plate XIV. fig. 2, ♀.)

*Vanessa fenestra*, Leech, Entomologist, xxiv., Suppl. p. 26 (Feb. 1891).

*Apatura chrysus*, Oberthür, Etud. d'Entom. xv. p. 10, pl. i. fig. 6 (1891, ? June).

*Female.* Primaries reddish fulvous, clouded with fuscous brown along two thirds of the inner margin and towards apex ; there is a large quadrate yellowish-white spot before end of cell ; this is preceded by a broad black bar, and outwardly edged with black ; before the subapical cloud, which encloses four hyaline spots, is a short, oblique, yellow macular band, tinged outwardly with reddish, and separated from a round subhyaline spot by the third median nervule ; below this is a large bluish-centred black spot, intersected by the first and second median nervules, and its lower edge confluent with a black spot on inner margin ; the outer margin is bordered with fuscous ; the submarginal band is reddish below costa, then yellowish, terminating in a whitish spot just above the submedian nervure. Secondaries reddish fulvous ; basal third, abdominal area, and outer marginal border fuscous brown ; central spot blackish ; there is a broad central transverse band, composed of black oblong spots, with yellowish or whitish centres ; this band is indistinct towards the costa, where it is represented by a broad, longitudinal, yellowish spot, narrowly edged outwardly and above with black, and it terminates in the first median interspace. Under surface of primaries same as above, but paler, and there is no black spot towards inner angle ; the secondaries are pale whitish brown, mottled and irrorated with reddish brown, and traversed by a chocolate-brown fascia, which is fairly broad at the costa, but narrow throughout the rest of its course to the anal angle ; the median nervure and first branch are also chocolate-brown ; there is a small brown discoidal spot, and indications of a submarginal series of the same colour, the lower spots of this series preceded by pale ones.

Expanse 77 millim.

I have one female specimen which was captured in July at Omei-shan by a native collector.

The male of *Dilipa fenestra*, from Léon-Fang, is figured and described as *Apatura chrysus* by M. Oberthür (*l. c.*). It appears to differ from the female in having all the wings yellowish, marked with black as follows :—primaries suffused with black on basal area ; there is a square spot in discoidal cell with a triangular one below it in the fork of median nervure, a broad oblique black band from costa to second median nervule, a round spot below it in the first median interspace, and an elongate one in the submedian interspace above inner angle ; the outer margin is bordered with black, and the subapical

cloud contains *two* small hyaline spots. Secondaries have the outer margin bordered with black; the central band is represented by six black spots, the first almost obliterated; the basal area and border of the greyish abdominal fold is suffused with blackish. Under surface of the primaries very similar to that of the male but the ground-colour is yellower, the secondaries are almost exactly identical.

When I described this species I placed it provisionally in the genus *Vanessa*. I now find that it is allied to *Dilipa* (*Apatura*?) *morgiana*, Westwood (Gen. Diurn. Lep. ii. p. 305).

### Genus ABROTA.

*Abrota*, Moore, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 176 (1857).

“HEAD of moderate size, tufted in front.

“*Eyes* prominent, naked.

“*Antennæ* long, filiform at the base, gradually thickening to a slender cylindric club.

“*Labial palpi* elevated above the level of the eyes, hairy, those at the base, side, and in front, long.

“*Abdomen* of moderate size.

“THORAX robust, clothed with long hairs.

“*Fore wings* elongate-trigonate; anterior margin boldly curved; apical angle slightly rounded; outer margin somewhat straight in the male, concave in the female, slightly waved, two thirds the length of the anterior; posterior margin slightly concave, rather longer than the outer; costal vein thick at the base, extending to beyond the middle of the costa; subcostal vein with the first branch arising about one fourth the length of the wing, second a little beyond it, and before the extremity of the discoidal cell, third branch arising at two thirds the length of the wing, and extending in a slight curve to the tip, fourth branch straight, arising halfway between it and the apex, which it reaches just below the tip; the terminal portion of the vein deflexed; upper discocellular vein very short, outwardly oblique, arising at one third from the base of the wing; middle discocellular vein curved outward; lower discocellular vein long, curved outward, and uniting with the third branch of the median vein at a little distance beyond its origin, closing the cell at a little more than one third the length of the wing.

“*Hind wings* somewhat rounded; anterior margin arched at the base, from thence nearly straight to the apex, where it curves slightly downward; exterior margin rather longer than the anterior, rounded and waved; precostal vein curved outward; costal vein curved, extending to the apex; subcostal vein branching near its base; upper discocellular vein arising at a short distance from the base of the subcostal branch; lower discocellular vein obsolete, so that the cell is open.

“*Fore legs* of the male slender; femur scaly in front, beneath clothed with fine long silky hairs; tibia as long as the femur, clothed with downy hairs; tarsus two thirds the length of tibia, conical, covered with uniform hairs: of the female, scaly; femur with a few silky hairs

beneath; tarsus rather longer than in the male, truncated at the tip, where it is finely spined beneath.

“*Four hind legs* moderately long, of equal length; tibia shorter than the femur; femur thickly scaled; tibia thickly clothed with short scaly hairs, with two rows of short thick spines; tarsus as long as the tibia, thickly clothed at the sides and beneath with rows of short spines; claws sharp, and much curved.” (*Moore, l. c.*)

### **Abrota pratti.** (Plate XIV. figs. 7 ♂, 8 ♀.)

*Abrota pratti*, Leech, Entomologist, xxiv., Suppl. Feb. p. 28 (1891).

*Male.* Allied to *Abrota mirus*, Fabr., but darker in coloration. The primaries are traversed by a black band as in *A. mirus*, but the space between median nervure and inner margin is not filled in with blackish; the cell is closed by a blackish open bar, and there are some other blackish marks within the cell; the black submarginal band is composed of lunulated spots, and is preceded by some more or less round black spots towards costa and inner margin; two pale spots near apex. The secondaries have a small black spot in the centre of basal area, and beyond are two equidistant black bands between first subcostal and first median nervules,—the outer one is broadest, and is interrupted by the second subcostal nervule; submarginal black band fairly broad and well defined; the outer margin of all the wings is narrowly bordered with black. Under surface brownish, suffused with violet-grey; markings darker, similar in form and position to those of *A. mirus*, except as regards the central line of all the wings, which in this species is broader and straight.

*Female.* Similar to the same sex of *Abrota mirus*, but the markings on upper surface are narrower, more clearly defined, and brighter fulvous; the apical white spots are much smaller, and the band in the cell is intersected through half its length by an interrupted black line. On the under surface all the wings are reddish brown, suffused with violet-grey; the fulvous markings of the upperside are faintly visible: there are some whitish spots and clouds at the apex of primaries, and three pale spots ringed with reddish brown on the basal area of secondaries. Expanse, ♂ 78 millim., ♀ 90 millim.

This is evidently a rare species. I have only received four specimens from Omei-shan and Kwei-chow. *Abrota mirus*, to which *A. pratti* is closely allied, appears to be confined to Sikkim.

### Genus ATHYMA.

*Athyma*, Westwood, Gen. Diurn. Lep. ii. p. 272 (1850); de Nicéville, Butt. Ind. ii. p. 165 (1886).

“**Body** robust; wings large and strong, generally with transverse white marks on a black ground.

“**Head** moderate, with a few long hairs in front.

“*Eyes* rather prominent, generally naked, but finely hirsute in some species.

“*Antennæ* not more than half the length of the fore wings, straight; terminated by a long and gradually formed slender club, slightly obliquely truncate at the tip, and with a fine keel-like line down the underside.

- “*Labial palpi* rather slender, obliquely directed upwards, but not reaching above the middle of the eyes; the tips horizontally porrected and slightly incurved, clothed with closely adpressed scaly hairs, with longer hairs at the base beneath, and towards the extremity of the second joint on the upperside; the terminal joint very short and obtuse.
- “**THORAX** robust; collar often variously coloured; dorsum often marked with white spots; metathorax large, deeply grooved down the middle, finely hairy.
- “*Fore wings* large, subtriangular. Anterior margin rounded; apical angle rounded. Outer margin three fifths of the length of the anterior, slightly convex, straight, or but very slightly concave, and slightly scalloped. Inner margin nearly straight, three-fourths of the length of the anterior margin. Costal vein strong, reaching to the middle of the costa; subcostal vein with its first branch arising at about one fourth of the length of the wing, followed immediately by the second branch; third branch arising at about two thirds of the length of the wing, and extending to the apex; fourth branch arising at about five sixths of the length of the wing, extending below the apex; the terminal portion of the vein rather deflexed. Upper discocellular vein almost obliterated, arising from the subcostal at one third of the length of the wing; middle discocellular very short, curved, forming the base of the lower discoidal vein; lower discocellular obsolete in the typical species, the discoidal cell being open. In others it is, however, distinct, although very slender, arising from the extremity of the middle discocellular, which is in such species curved obliquely towards the base of the wing, and joining the median vein close to the origin of the third branch.
- “*Hind wings* subtriangular; costal margin rather rounded; outer margin rounded, and more strongly scalloped. Precostal vein strongly curved outwards; costal vein arched, and extending to the outer angle. Subcostal vein branching very near to its base, and also emitting the upper discocellular very near to the base of its branch. Upper discocellular forming the base of the discoidal vein. Lower discocellular obsolete.
- “*Fore legs* of the male small, pectoral, finely hairy. Tibia not so long as the femur. Tarsus rather more than two thirds of the length of the tibia; when denuded it is cylindrical, simple, exarticulate, and destitute of claws or spines, as is also the tip of the tibia. Fore legs of the female rather longer and thicker, scaly; tarsus with well-developed joints; the first being half the length of the tarsus, without spines at the tip beneath; second, third, and fourth joints with strong short spines on the underside.
- “*Four hind legs* moderately long; tibia spined beneath, tibial spurs strong; tarsi more thickly spined beneath, the spines arranged in rows. Claws and their appendages of the same form as in the allied genera.
- “**ABDOMEN** moderately robust, often party-coloured, especially at the base.” (*Westwood, l. c.*)

***Athyma mahesa.*** (Plate XVII. fig. 10, ♂ var.)

*Athyma mahesa*, Moore, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 176, pl. v. a. fig. 7 (1857); Proc. Zool. Soc. Lond. 1858, p. 15; de Nicéville, Butt. Ind. ii. p. 171 (1886).

- Upperside smoky-black, fore wings with a green gloss in some lights. Fore wing with three oblique white ovate spots from subcostal vein, one third from the apex; two white spots in middle of the wing, the upper one very small, and two white spots on middle of posterior

margin, the upper oval, the lower narrow; two indistinct white spots in discoidal cell, and some indistinct greenish spots at the base of the wing; a marginal and submarginal row of light brown spots. Hind wing with an inner white band, divided by the veins, and an outer or submarginal row of indistinct brownish-white conic-shaped spots; also a very indistinct marginal row of small light brown spots. Body brown, abdomen with two rows of white spots. Underside paler, tinged with ferruginous about the disc; markings the same, but all very distinct, and more or less white; the spots within discoidal cell and base of fore wing divided by black marks; base of costal margin yellowish white: hind wing with space between precostal and costal vein yellowish white; a curved oval black mark, whitish within, between the costal vein and inner band; a row of black patches between inner and outer band; body, and broadly on abdominal margin, yellowish grey. Expanse  $2\frac{7}{8}$  inches." (*Moore, l. c.*)

The foregoing description refers to the Indian type of *A. mahesa*. Chinese specimens of the species exhibit certain constant points of difference, and represent a good local race to which I now give the name of—

Var. *serica*, var. nov. (Plate XVII. fig. 10, ♂.) Upper surface black in the male, smoky brown in the female. The central white markings are narrow in the male, and those on the submarginal area and in discoidal cell are suffused with blackish. The female has the white markings as in typical males. Under surface also darker than in the type-form, and the white markings are of less extent in both sexes. The antennæ are tipped with ferruginous above, and the apical third is generally ferruginous beneath.

Occurs sparingly in Western China at Omei-shan, Moupin, and Chia-ting-fu in June and July, at various elevations up to 4000 feet.

According to de Nicéville, *A. mahesa* is a common species in Sikkim at low elevations, and occurs eastwards as far as Sibsagar in Upper Assam. It is also recorded from South India, Ootacamund, and North Canara.

### ***Athyma asura*.** (Plate XVII. fig. 7, ♂ var.)

*Athyma asura*, Moore, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 171, pl. v. a. fig. 1 (1857); de Nicéville, Butt. Ind. ii. p. 168 (1886).

“Upperside smoky-brown, markings creamy-white. Fore wing with a narrow discoidal streak, which is terminated at a short distance by an angular mark; a band of spots curving outwards from anterior to middle of posterior margin, the first spot commencing as a very narrow line, second and third long and oval, fourth the smallest, fifth somewhat larger and rounded, sixth larger still and oval, seventh the largest, square, indented at the side, eighth narrow and on posterior margin; a submarginal row of well-defined lunular marks; terminated on the apex of the wing by an inner row of three small spots. Hind wing with a broad inner band; also a less broad band from abdominal to anterior angle, this being intersected by the veinlets, and having a single black spot in the middle between each veinlet; a marginal pale brown line in both wings; a narrow bluish-white collar and band across the base of the

abdomen. Underside bright ferruginous; markings as above, but the fore wing has the submarginal row of marks broad, and a black spot in the middle of each; also a marginal row of small spots; some black lines bordering the discoidal marks; also a small black circle near base of wing, and a patch of black on posterior margin near the angle. Hind wing with the inner and spotted outer band the same as above; a bluish-green curved line across the base of the wing, and a marginal row of lunular spots; body and upper part of abdominal margin bluish green. Expanse 3 inches. Sexes alike.

“This species may be distinguished from all others by the outer band on the hind wing having a central spot between each vein.” (*Moore, l. c.*)

In China this species is represented by a distinct form, which I describe as—

Var. *elwesi*, var. nov. (Plate XVII. fig. 7, ♂.) Male blacker on the upper surface, the white markings narrower; the discoidal streak especially slender, and its termination represented by a small, nearly round, spot. The under surface is chocolate-brown, but the white markings are almost normal in width. Female specimens from China agree with typical males in colour and width of marking.

This form bears the same relation to *A. asura* that var. *orientalis* does to *A. opalina*.

Occurs at Chang-yang in Central China, and in Western China at Moupin, Omei-shan, Wa-shan, and Chow-pin-sa, in June and July, up to an elevation of 6000 feet. It appears to be rather scarce in all these localities. In India this species is found in the Western Himalayas, Assam, Cachar, and Khasi Hills, but appears to be nowhere common.

### *Athyma opalina*.

*Limenitis opalina*, Kollar, Hügel's Kaschmir, iv. pt. 2, p. 427 (1848).

*Athyma opalina*, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 171, pl. v. a. fig. 2 (1857); de Nicéville, Butt. Ind. ii. p. 173 (1886).

*Athyma orientalis*, Elwes, Trans. Ent. Soc. Lond. 1888, p. 354, pl. ix. fig. 4, ♂.

*Athyma orientalis*, var. *constricta*, Alphéraky, Rom. sur Léop. v. p. 110, pl. v. figs. 5 a, 5 b (1889).

The typical form is described by Mr. de Nicéville as follows:—

“*Male*. Upperside black, with creamy-white markings. Fore wing with a narrow streak and two spots at its outer end in the cell, a lengthened triangular spot beyond, an oblique subapical series of three spots (sometimes with one or two very fine streaks below the costa above the upper spot), the upper one oval, the middle one linear and about twice as large, the lower one smallest; a discal series of four spots from the third median nervule to the inner margin, the two upper ones rounded and well separated, the two lower somewhat quadrate

and separated by the submedian nervure only. Two submarginal waved pale lines, the inner one more distinct, especially towards the apex and inner angle. Hind wing with a straight discal band, from the costal to the submedian nervure, divided only by the veins, a submarginal series of lunules placed between the nervules from the first subcostal nervule to the submedian nervure. A pale brown, straight, fine, marginal line. Underside: fore wing ferruginous, the area below the cell marked with black patches between the veins, white markings much as above, the submarginal lines more distinct, a patch of violaceous powdering about the middle of the outer margin. Hind wing also ferruginous, outwardly more or less with violaceous powdering. A curved white streak from the base above the costal nervure, the discal band as above, but widening out below the costal nervure, the submarginal series of lunules larger, the marginal line broader and violaceous, abdominal area pale greenish. Cilia alternately black and white. Body black above, with an iridescent bluish-white band at the base of the abdomen; below white. *Female* differs from the male in the ground-colour on both sides being much paler, and all the white markings considerably larger."

Var. **orientalis**, Elwes. *Male*. Upper surface, all the wings deeper black than in the type; the white spots are smaller and the bands narrower; discoidal streak suffused with black. Under surface deep ferruginous, darker than in the type, but the white markings are not conspicuously narrower. In some specimens from Wa-shan and Omei-shan the abdominal area of the secondaries is hardly pale greenish, but there are a few greenish-grey scales sprinkled on this portion of the wing; the central band is oblique to submedian nervure, where it terminates in a subacute point.

*Female* agrees with typical males in colour, size of spots, and width of bands, but rather exceeds typical females in expanse.

This is the only form of *A. opalina* received from China. It occurs at Pu-tsu-fong, Moupin, Wa-ssu-kow, Wa-shan, and Omei-shan in Western China, and at Chang-yang in Central China. Flies in June and July at elevations ranging from about 4000 feet up to nearly 10,000 feet.

Mr. Elwes says of *orientalis*, which he considers to be a distinct species:—"I have eight males from Sikkim, one from Nepal, and two from the Khasia, which all agree in being of a much darker colour than any of my specimens of *opalina*, which are from Murree, Simla, Kangra, Mandi, and Chamba; the bands of the hind wing are also narrower, and of a less pure white, so that I should have no difficulty in distinguishing the eastern form if the labels were removed."

I am quite unable to find any specific difference between this form and *A. opalina*, of which I have an extensive series of both sexes from various parts of the North-western Himalayas. In the collection of the late Otto Möller, from Darjeeling, now in my possession, there is a fine series of *A. opalina*, which comprises six examples of the type-form (*opalina*) and six of the dark form with narrow white bands (*orientalis*). The latter specimens

are dated July–October, and the *opalina* specimens, April and May. It would appear, then, that in the North-western Himalayas the typical form only occurs, and in Western China, where hundreds of examples were captured in June and July, the *orientalis* form alone is found; whilst in Sikkim both forms occur, which is suggestive of the species being seasonally dimorphic in that district. Alphéraky is inclined to think that *orientalis* is separable from *opalina* by the contour of the wings, but examination of a large number of specimens will convince one that in dealing with this species the outline of the wing is not a trustworthy character.

Var. **constricta**, Alphéraky. “Var. minor, obscurior, alis posticis margine anali longiore, maculis fasciisque albis angustioribus, striga longitudinali punctisque cellulæ anticarum albis evanescentibus. ♂ 47 millim.” (*Alphéraky, l. c.*)

One male taken on the 20th of August, near Chouï-tchin-pou. M. Alphéraky considers the specimen described above to be representative of a new local race of *A. opalina*. I have received exactly similar specimens from various localities in Western China. In my opinion these are simply small examples of *A. opalina*, var. *orientalis*, and I may add that this kind of aberration is of frequent occurrence in many species of Rhopalocera from Western China.

I have one female specimen, taken by a native collector in the Province of Kwei-chow, which exhibits the following aberrant characters:—a long white dash above the terminal spot of the discal streak of primaries, distinct on both surfaces; ground-colour of under surface much smeared and irregularly blotched with black.

### ***Athyma jina*.**

*Athyma jina*, Moore, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 172, pl. v. a. fig. 3 (1857); Proc. Zool. Soc. Lond. 1858, p. 18; de Nicéville, Butt. Ind. ii. p. 169 (1886).

“*Male*. Upperside smoky brown; markings creamy white. Fore wing with the discoidal streak entire, long, broad, and thickening to the extremity; a series of seven spots from subcostal vein curving outwards to middle of posterior margin, the first being small, second larger, broader, third narrow, fourth small, fifth larger, oval, sixth the largest, somewhat square and indented at the sides, seventh narrow, elongated, triangular; a submarginal row of rather indistinct spots, those on the apex broadest. Hind wing with inner band somewhat narrow; outer band composed of broad lunulated spots; band across base of abdomen whitish. Underside brilliant ferruginous, posterior margin of fore wing blackish; markings the same as above, but the fore wing with an additional spot to the curved row on costal



margin; extreme posterior margin blackish, bounded inwardly by a submarginal row of white lines. Hind wing with the inner band extending across abdominal margin; space between base of wing and costal vein white; extreme exterior margin blackish, bounded inwardly by a marginal row of narrow lunular marks. Body white. Expanse 3 inches." (*Moore, l. c.*)

The *female* is larger, but does not otherwise differ from the male.

Some specimens from Omei-shan and Wa-shan agree exactly with Sikkim examples, but the majority of Chinese *A. jina* are darker than the type, the white bands are not quite so broad, and the white spots are smaller, agreeing in this respect with Chinese *A. opalina* and *A. asura*.

Rather common at Omei-shan, Wa-shan, and Moupin in Western China; occurs also at Ichang and Chang-yang in Central China, and is found in June and July at various elevations up to 6000 feet.

In his paper on the Lepidoptera of Sikkim (Trans. Ent. Soc. 1888, p. 353), Mr. Elwes says that *A. jina* is "not a common species, and, as far as I know, confined, like so many of the species peculiar to Sikkim, to the zone of heavy forest between 6000 and 8000 feet, where I have taken it in July."

***Athyma fortuna.*** (Plate XVII. figs. 2 ♂, 1 ♂ var.)

*Athyma fortuna*, Leech, Trans. Ent. Soc. Lond. 1889, p. 107, pl. viii. figs. 1, 1a.

*Athyma fortuna*, var. *diffusa*, Leech, Entomologist, xxiii. p. 34 (1890).

*Male.* Upper surface smoky black, with a slight purplish reflection in certain lights. Primaries: discoidal streak club-shaped, entire; discal band represented by a series of nine white or opaline spots, of which the third, fourth, and fifth, as also the eighth and ninth, are only separated by the nerves. Two small spots and a faint curved linear mark at the outer angle are the only submarginal markings. Secondaries: a broad and almost straight central white or opaline band, interrupted only by the subcostal nervule, and on the hind margin a white or opaline bar tapering from the anal angle towards the costa and intersected by the nervules, forming a series of six spots.

*Female.* Upper surface brownish black. Discal streak terminates in a dot beyond the cell. Markings as in the male, but spots smaller and of a creamy tint. Fringes white, chequered with black at the extremities of the nervules.

Under surface of all the wings orange-brown. The discal area and a quadrate spot at anal angle of primaries black. White markings much as on upper surface, but not confluent, and the streak terminates in a sharp point just outside the cell. There is also a whitish line bounding the lower two thirds of outer margin, and two small white spots, one above and the other directly below the discal streak. A series of black crescent-shaped marks commences near the costa, and, skirting the external edges of apical spots, runs parallel with outer margin to black spot at anal angle: these marks are bordered externally with white. Markings on the secondaries as on the upper surface, but with the addition of a fairly broad basal streak, which is bluish grey in the male, but white in female, and bluish-grey abdominal fold.

Expanse, ♂ 74 millim., ♀ 84 millim.

This species is most nearly allied to *Athyma jina*, Moore, from which, however, it can easily be distinguished by the narrower discal streak, and by the absence of the white abdominal belt. On the upper surface it also bears a superficial resemblance to *A. sulphitia*, Cramer, but the character of the discal streak and the markings of the under surface at once separate it from that species.

Var. **diffusa**. (Plate XVII. fig. 1, ♂.) The white spots forming the central band of all the wings exhibit a tendency to elongation, as in *L. sydyi*, Ld., var. *latefasciata*, Mén. (Schr. Reis. p. 29).

Occurs only in Central China, and is rather common at Chang-yang and Ichang in June and July.

***Athyma sulphitia***. (Plate XVII. fig. 5, var.)

*Papilio sulphitia*, Cramer, Pap. Exot. iii. pl. cexiv. figs. E, F (1779).

*Athyma sulphitia*, de Nicéville, Butt. Ind. p. 174 (1886).

*Nymphalis strophia*, Godart, Enc. Meth. ix. p. 431 (1823).

*Limenitis strophia*, Kollar, Hügel's Kaschmir, iv. pt. 2, p. 429 (1844).

*Athyma sulphitia*, var. *ningpoana*, Felder, Wien. ent. Mon. vi. p. 26 (1862).

♂ *Male*. Upperside black, markings white. Fore wing with a streak in the cell, divided towards its end; three short streaks beyond the end of the cell, divided by the discoidal nervules; a discal series of eight spots, the five upper ones small and round, the sixth much larger and cordiform, the seventh larger still, outwardly indented in the middle, the eighth small and linear; a submarginal series of four lunular spots from the anal angle. Hind wing with a discal macular band, divided by the veins, from the submedian nervure to the middle of the costa; a submarginal series of somewhat quadrate decreasing spots from the submedian to the costal nervure. Underside ochreous. Fore wing with the middle of the disc to the inner margin blackish, markings much as above, but with some diffused black spots on the outer margin; a marginal series of white lunules, in addition to the submarginal series of the upperside. Hind wing with the markings of the upperside, but, in addition, there is a series of white lunules on the margin, the inner edge of the submarginal white band bears a series of round black spots, with another series of more diffused dusky brown spots beyond, the base with a diffused white band bearing two small black spots in the cell, and four similar ones above it; the præcostal nervure defined with black. Cilia white, black at the ends of the nervules. Body black above, whitish below." (*de Nicéville, l. c.*)

The *female* is larger and the outer margin of primaries is gently rounded. The ground-colour is fuliginous brown, but the white markings are similar to those of the male.

Expanse, ♂ 66-74 millim., ♀ 74-77 millim.

Var. **ningpoana**, Felder. (Plate XVII. fig. 5, ♂.) "Unicum masculinum specimen ex montibus Ningpoanis recepinus. Differt ab illis Chinæ meridionalis striga et macula cellulari alarum anticarum confluentibus lunulisque marginalibus pagina inferioris angustioribus. Singularem ista species format sectionem palpis brevioribus, angustioribus, ramō subcostali tertio alarum

anticarum proxime post alæ medium emisso ramisque earum medianis ultimis multo magis distantibus, cellula ideo longiore. Unica species est generis, quæ in regiones adeo septentrionales. *Athyma* enim *Nycteis* et *Cassiope*, Ménétr. Amurenses ad genus *Apaturam* pertinent." (Felder, l. c.)

This is a common species throughout China, from Ningpo to Moupin. All the specimens I have received agree in all important characters with a beautiful coloured drawing of the type of var. *ningpoana* in Baron Felder's collection, kindly sent to me by Dr. Rogenhofer, of the Natural History Museum, Vienna, and also with de Nicéville's description as given above. In some examples the discoidal streak is almost linear throughout and the terminal portion hardly detached; in others the outer third of the streak is broadly sagittate and distinctly, though not widely, separated from the main portion. I have never seen any example of *A. sulphitia* with the discoidal streak so broad and the terminal portion so widely removed as represented in Cramer's figure of the type, which was probably from South China.

"Kollar states that Carl Freiherr von Hügel brought this species from Masuri; there is, however, as far as I am aware, no other record of its occurrence out of China." (de Nicéville.)

### ***Athyma disjuncta.*** (Plate XVII. fig. 3, ♂.)

*Athyma disjuncta*, Leech, Entomologist, xxiii. p. 33 (1890).

Fuliginous black, with white markings. Discoidal streak of primaries terminating in a somewhat triangular head, and followed by an oblong transverse dash; beyond and nearer the costa are three other oblong spots; central band composed of eight spots, the sixth of which is round and larger than the others, but the fourth is very small or quite absent; submarginal series of linear spots only faintly indicated towards costa, followed by black quadrate spots. Secondaries with central and submarginal bands, the latter composed of linear spots, slightly decreasing in size towards costa; between the bands and also before outer margin are some black quadrate spots. Under surface of primaries blackish, marked with tawny along the nerves; basal and central spots as above, but the fourth spot of the latter series more clearly defined; marginal series large, those nearest the costa nearly obliterated, and the others intersected by a tawny transverse band; secondaries tawny, with a black-edged white streak from the middle of the base to the costa, followed by some black dots; central band bordered with blackish, interrupted, and extending only to the abdominal fold; submarginal band as above, but the inner edges of the spots are rounded and bordered with blackish; between these bands is a series of conspicuous short longitudinal black dashes, the lower ones edged externally with white; a fairly broad blackish band on outer margin, preceded by an interrupted white one.

Expanse, ♂ 68 millim., ♀ 76 millim.

The bands on upper surface are very like those of *A. sulphitia*, but the

form of the discoidal streak on primaries is very similar to that of *L. helmanni*.

This species is not uncommon at Chang-yang in Central China, and occurs also at Omei-shan, Moupin, Wa-shan, and Huang-mu-chang in Western China.

***Athyma recurva*, sp. nov.** (Plate XVII. fig. 9, ♂.)

*Male*. Deep purplish black. The white bands and spots are very similar to those of *A. disjuncta*, but the discoidal markings of primaries are different and comprise a thin line of white along the lower wall of discoidal cell and a large triangular white spot at the end of the cell; the submarginal band of secondaries is nearer the outer margin. Under surface reddish brown; primaries ornamented as above: secondaries have a rather broad, curved, greyish-white streak extending from the base of the median nervure to the costal spot of the central band; there is a large black annulated mark in the discoidal cell and some short black streaks above it; the white submarginal band is narrow and preceded by a series of fuliginous spots, the fourth, fifth, and sixth edged internally with whitish; marginal line white, tinged with lilacine; the edge of the abdominal fold is ashy grey.

Expanse 70–75 millim.

Occurs at Moupin and Wa-shan, Western China, in June, but appears to be very scarce.

***Athyma punctata*.** (Plate XVI. fig. 5, ♂.)

*Athyma punctata*, Lcech, Entomologist, xxiii. p. 33 (1890).

*Male*. Black; primaries with apical and central white spots, shaded on edges with violet-grey; the former is intersected by the subcostal nervure, and the latter by the rays of the median. Secondaries with a large central white spot, shaded with violet as on primaries; broad submarginal line pale. Under surface rusty brown: primaries have white spots as above; a violet-grey longitudinal streak from the base, interrupted by the ground-colour before reaching the centre of the wing, where it terminates, is broadly bordered below and outwardly with blackish; there are indications of a violet-grey submarginal line: secondaries white along the costa, central white fascia extends from costa to the bluish-grey abdominal fold; submarginal band whitish, tinged with violet and bordered outwardly with a dark brownish shade.

Expanse 68 millim.

Two male specimens taken in May and July at Chang-yang.

Genus LIMENITIS.

*Limenitis*, Fabricius, Illiger's Magazin, vi. p. 281 (1807); Westwood, Gen. Diurn. Lep. ii. p. 274 (1850); de Nicéville, Butt. Ind. ii. p. 155 (1886).

- “ **BODY** moderate ; abdomen rather short ; wings long, trigonate.
- “ **HEAD** rather small, with a small tuft of hair at the base of each antenna, and a small, conical, frontal tuft.
- “ *Eyes* but slightly prominent, naked.
- “ *Labial palpi* rather short, thick, directed obliquely upwards, reaching rather above the middle of the eyes ; the tips convergent, thickly clothed with short hairs, especially upon the underside of the basal joint, and the upperside of the terminal half of the second joint ; the third joint short, oval, obtuse at the tip.
- “ *Antennæ*, scarcely half the length of the costal margin of the fore wing, straight ; terminated by a very slender, gradually-formed club, which is nearly one third of the length of the whole antenna, rather obliquely truncate at the tip, with a very shallow double groove on the underside. Spiral tongue long and strong.
- “ **THORAX** oval, hairy ; tippets and sides of the metathorax more hirsute.
- “ *Fore wings* elongate-trigonate. Fore margin very little arched ; apical angle rounded. Apical margin rather more than two thirds of the length of the anterior, emarginate, and very slightly scalloped. Inner margin a very little longer than the apical one, nearly straight. Costal vein strong, extending to three fifths of the length of the costa ; subcostal vein with the first and second branches arising close together before the extremity of the discoidal cell ; third branch arising just beyond the place of junction of the costal vein with the costa, and extending to the tip of the wing ; fourth branch arising at about four fifths of the length of the wing, reaching the apical margin a little below the apex. The terminal portion of the subcostal nervure very slightly deflexed. Upper discocellular arising at four ninths of the length of the wing, extremely short ; middle discocellular vein short, curved outwards ; lower discocellular slender, nearly straight, uniting with the third branch of the median vein just beyond its origin, closing the discoidal cell, which is rather narrow, and reaches nearly to half the length of the wing. Median vein strong ; its branches wide apart ; the third gradually arched.
- “ *Hind wings* subtriangular, costal margin not much curved ; outer margin of the same length as the costal, somewhat truncate from the extremity of the subcostal vein to that of the first branch of the median, scalloped. Precostal vein well-defined and curved outwardly ; costal vein arched, extending to the outer angle of the wing ; subcostal vein arising just before the precostal, its branches arising at the same distance from its base as exists between the base of the wing and that of the precostal vein. Upper discocellular vein forming the base of the discoidal one, and arising at a similar distance from the base of the subcostal branch ; lower discocellular wanting, so that the cell is open. Median vein and its branches moderately robust.
- “ *Fore legs* of the male small, pectoral, clothed with rather short loose hairs ; femur slightly thickened at the base ; tibia nearly straight, as long as the femur, slightly thickened at the tip ; tarsus two thirds of the length of the tibia, gradually attenuated, and, when denuded of scales and hairs, consisting of three distinct joints, the basal joint more than half the length of the tarsus, the second and third of nearly equal length. Of the female longer than in the male, more scaly, and much less hairy ; the femur and tibia of nearly equal length ; the tarsus two thirds of the length of the tibia, and of equal thickness with it to the tip, composed of five joints, the basal joint occupying half the length of the

tarsus, the second, third, and fourth gradually shortening, each with a pair of short spines at the tip, on the lower side, the terminal joint very small, with two very short straight spines.

“*Four hind legs* moderately long and robust, scaly; femur hairy beneath; tibia of equal length with the femur, with strong spines beneath (except at the basal one-third) and at the tip, tibial spurs strong; tarsus equal to the tibia in length and thickness, with four rows of spines beneath; claws rather large, but not so long as the terminal setæ of the tarsus, strongly curved, and very acute; paronychial bifid, setose, nearly as long as the claws; pulvillus short.

“*ABDOMEN* rather small.

“*LARVA* subcylindrical, narrowed behind, with setose tubercles on the sides of the body, and with several pairs of elongated, obtuse, hairy spines on the back, those towards the head being the longest. *Pupa* suspended by the tail, head-case beaked or bifid, gibbose on the back of the thorax.” (*Westwood, l. c.*)

This genus is represented in North America, Europe, and throughout nearly the whole of Asia.

### ***Limenitis albomaculata.*** (Plate XVI. fig. 3, ♂.)

*Limenitis albomaculata*, Lecch, Entomologist, xxiv., Suppl. Feb. p. 28 (1891); Oberthür, Etud. d'Entom. xvi. p. 7, pl. ii. fig. 15 (1892).

*Male.* Velvety black; an elongated oval white spot, edged externally with bluish, is placed obliquely on the central area of primaries, and a smaller white spot lies towards the apex of the wing; a large white transverse oval spot occupies the central area of the secondaries,—this is edged outwardly with blue, but its lower end is not well defined. Fringes of the ground-colour chequered with white. Under surface reddish brown: primaries have an abbreviated oblique central fascia bluish white; the discal cell is nearly filled up with blackish, and crossed by two bluish-white bars; there is a broad, blackish, longitudinal dash in each nervular interspace; these are more or less interrupted towards outer margin; towards apex there are two white spots, the lower of these is nearly round: secondaries have the basal half bluish white, except along the costal area, which is reddish brown; central transverse fascia slightly curved and attenuated towards the anal angle; the median portion of this band is white, the extremities bluish, and it is bordered on each side by a blackish line; on the outer marginal area is a double series of black spots, both followed by an interrupted violet-grey transverse line.

Expanse 64–76 millim.

Moupin, at an elevation of from 10,000 to 12,000 feet.

Superficially resembles *Athyma punctata*, Lecch (Entom. xxiii. p. 33), and also *Hypolimnna misippus*, Linn. The female has not yet been found.

This is one of the very fine species discovered in some numbers by Herr Kricheldorf at Moupin in 1890. M. Oberthür (*l. c.*) records this species from “the region north of Ta-chien-lu.”

**Limenitis elwesi.**

*Limenitis elwesi*, Oberthür, Bull. Soc. Ent. Fr. 1883, p. 128; Etud. d'Entom. ix. p. 15, pl. ii. fig. 4 (1884).

*Male*. Dark olivaceous, marked with white. The primaries have two bars in the discoidal cell and a small round spot below the first bar in the submedian interspace; there is an irregular transverse series of seven spots beyond the centre of the wing; three spots towards apex, the lower one obscure; a submarginal series of smaller spots preceded and followed by an interrupted black band. Secondaries have a central series of eight spots, the last two smaller and obscure; submarginal series of spots small, preceded by an interrupted black band, and followed by a series of black lunules. Fringes dark olivaceous, marked with white, most distinctly on the secondaries. Under surface of primaries fuliginous grey, apical half of costa and outer margin bright chestnut-brown, white markings as above, but more creamy in colour, and there is an additional bar at end of cell; secondaries are bright chestnut-brown; a cream-coloured oblique band from near the base of costa extends through the discoidal cell to the junction of the second and third median nervules, its upper portion uniting with the first spot of a series of four, placed just beyond the cell; there is a cream-coloured streak in the submedian interspace, and a transverse central band of the same colour intersected by the nervules; the nervules are edged on each side with fuliginous grey, and powdered with cream-coloured scales, the latter forming patches towards the extremity of each nervule. The fringes are cream-coloured, marked with blackish. Thorax colour of fore wings; collar chestnut-brown; antennæ two thirds the length of primaries, black, with the clubs chestnut-brown.

Expanse 70 millim.

Discovered by M. l'Abbé Dubernard at Tsé-kou in Thibet. I have one male captured by a native collector at Chow-pin-sa in May or June at an elevation of 3000 feet. The female appears to be unknown.

**Limenitis sinensium.**

*Limenitis sinensium*, Oberthür, Etud. d'Entom. ii. p. 25, pl. iv. fig. 8 (1876).

*Male*. Fuliginous, spotted with deep yellow. Primaries dusted with yellowish scales at the base; there are two large spots in the discoidal cell (two obscure pale spots beyond), and a submarginal series of six, the central one small and triangular; outer marginal border slightly paler, traversed by a blackish line. Secondaries have a large round subbasal spot, its upper part intersected by the venation, and a short obscure pale streak beyond; a submarginal series of seven spots; outer marginal border paler, traversed by a blackish band. Fringes black, marked with white. Under surface deep buff-yellow; primaries have three short ferruginous streaks, one on the discoidal cell, one beyond the cell, and one between the last and the apex; from the lower edge of each of these a black band runs to the inner margin, the first and second unite in the first median interspace, enclosing a shining greyish spot, and there is a large irregular patch of the same colour enclosing a yellow spot in the submedian interspace; the outer black band unites with the second along the course of the nervules, thus breaking up the ground-colour into three large spots; inner margin fuliginous grey, as also is the outer margin from angle to third median nervule; secondaries have a slightly

angulated ferruginous central band, and a narrow band of the same colour precedes the fuliginous-grey outer marginal border; venation black.

*Female.* Similar to the male, but larger, and the spots are rather paler yellow.

Expanse, ♂ 66-76 millim., ♀ 84 millim.

Appears to be common at Moupin, Ta-chien-lu, Wa-shan, Wa-ssu-kow, and Pu-tsu-fong in Western China, but I have only received two examples of the female; this sex has not previously been referred to. The species is on the wing in June and July, and occurs at various altitudes up to nearly 10,000 feet. The type was taken in the neighbourhood of Peking.

### **Limenitis cottini.**

*Limenitis cottini*, Oberthür, Etud. d'Entom. ix. p. 17, pl. ii. fig. 5 (1884).

*Male.* Brownish black. Primaries with two infuscated whitish spots in the discoidal cell, with a smaller one below in the submedian interspace; a broad central macular whitish band, and three white spots before the apex. Secondaries with one large whitish spot in the discoidal cell, and white macular band as on primaries, but broader. All the wings have indications of a submarginal series of whitish spots. Fringes of the ground-colour chequered with white. Under surface of primaries fuliginous, the costa and nervules on apical area and outer third of the wing bordered with ferruginous brown; there is a short ferruginous streak between the discoidal spots, and one at the end of the cell; spots and bands as on the upper surface, but pure white: secondaries ferruginous brown, with a large white spot in the cell, and two smaller ones above it; central band as on upper surface; outer margin with a broad white band, traversed by a line of the ground-colour, and preceded by a narrower black band traversed by a white line; both these bands are intersected by the ferruginous-brown nervules; the abdominal margin is broadly white.

*Female.* Except that the central markings are rather broader and sometimes purer white above, this sex, which has not been described hitherto, does not differ from the male in colour or ornamentation.

Expanse, ♂ 56-62 millim., ♀ 62-66 millim.

On the upper surface the white spot in cell of secondaries varies in size; in some male specimens it is much reduced, and in one or two examples entirely absent. The spots in cell of primaries are sometimes united, forming a notched discal streak on both surfaces of the wing. On the under surface the fifth spot of central band on primaries is often produced inwards, and in some few specimens the sixth spot unites with the enlarged spot below cell.

Appears to be a common and widely-distributed species in Western China, but among the large number of specimens I have received I could only detect three females. This sex does not appear to have been hitherto recorded.



**Limenitis sydyi.** (Plate XVII. fig. 4, ♂.)

*Limenitis sydyi*, Lederer, Verh. zool.-bot. Ges. Wien, 1853, p. 357, pl. i. fig. 3; Lang, Butt. Eur. p. 216 (1884).

? *Limenitis sidii*, var. *japonica*, Ménétériés, Cat. Mus. Petr. pt. 2, p. 103 (1857).

*Limenitis sydyi*, var. *latefasciata*, Ménétériés, Schrenck's Reisen, ii. p. 29; Fixsen, Rom. sur Léop. iii. p. 293 (1887).

"Expands 1.75 inch. All the wings dark brown. Fore wings with a band of white spots running outwards from the centre of the costa; in the centre of the inner margin is a large white spot, and near the apex three small ones. All the white markings have a violet gloss. Underside: very like that of *L. sibylla*, but duller; central band of hind wings narrower and more oblique; there is only a single row of black dots; the hind margin is rather broadly greenish white, with a broad brown line. Habitat: the Altai." (*Lang, l. c.*)

Var. *latefasciata*, Ménétériés. "Le mâle présente de part et d'autre la bande blanche qui traverse les quatre ailes beaucoup plus large, à taches plus contigues, et d'un blanc à reflets d'un violet rosé. La femelle présente également cette bande blanche transversale, large, mais pas autant que chez le mâle, les taches sont aussi moins contigues, et les reflets très peu apparents; puis, à la base des ailes supérieures et près du bord antérieur, on remarque une tache blanche oblique, et un petit point blanc plus interne, bordés de noir, qui ne sont que la reproduction d'une partie des taches du dessous; de plus, aux ailes inférieures, non loin des bords postérieur et extérieur, on voit une rangée de six larges traits d'un beau blanc, lesquels sont faiblement indiqués chez la femelle de la *sydyi*; il y a bien aussi, sur l'angle anal, une tache couleur marron, peu apparente, dont on reconnaît la trace chez l'espèce type. Le reste est parfaitement semblable." (*Ménétériés, in Schrenck's Reisen.*)

Chinese specimens of *L. sydyi* vary in colour; some males are deep purple-black, with the white markings tinged with bluish; others are fuliginous brown, with pure white markings. The secondaries have a submarginal series of white spots, and the primaries a narrow and ill-defined pale submarginal band.

The *female* is fuliginous: primaries have a short longitudinal white streak in the discoidal cell separated from an elongate white spot by a ferruginous transverse streak; the discal white markings are similar to those of the male, but all the wings have a submarginal white band, interrupted by the nervules, that on primaries not well defined towards costa, where it is preceded by a rather diffuse ferruginous band.

Some male examples have the discoidal markings as in the female, but they are never so clearly defined.

Expanse, ♂ 64-70 millim., ♀ 75-78 millim.

Occurs at Chang-yang and Kiukiang in Central China, and throughout Western China as far as Moupin. Fixsen records specimens, which he refers to var. *latefasciata*, from Corea; but so far as I know this form does not occur in China.

De l'Orza and Ménétériés both record *L. sydyi* from Japan; but as this species has not subsequently been found in that country, I am inclined to believe

that these authors must have wrongly identified their insects. Ménétriés' description of *L. sidii*, var. *japonica*\*, agrees very well with Japanese specimens of *L. sibylla*.

*Distribution.* Altai, Amur, Corea, Western and Central China.

### **Limenitis amphyssa.**

*Limenitis amphyssa*, Ménétriés, Bull. Acad. Petr. xvii. p. 215; Schrenck's Reisen, ii. p. 30, pl. iii. fig. 1 (1859); Lang, Butt. Eur. p. 216 (1884).

"Alis subdentatis fuscis, subtus ferrugineis, utrinque fascia posticarum obliqua; maris anticarum basi linea longitudinali interrupta, apice lata cuneata; subtus posticarum basi cinereo-cœrulescentibus." (*Ménétriés, Schrenck's Reisen.*)

"Wings dark brown. Fore wings with three white spots near the apex, then six larger ones arranged in a crescentic figure extending from the centre of the costa to the centre of the inner margin, and two more white spots near the basal end of the costa. Hind wings with a white central band like that in *L. sibylla*. Parallel to all the hind margins is a row of light spots. Underside fulvous, with markings similar to those above; hind wing with some bluish-green basal spots." (*Lang, l. c.*)

The *female* is larger, but does not exhibit any other appreciable difference from the male.

Expanse, ♂ 62-68 millim., ♀ 80 millim.

I have one example of each sex from Chang-yang in Central China, and one male from Gensan in Corea taken in July. These three specimens differ from Amurland examples in my collection in the absence of the white mark at the base of the discoidal cell on the upper surface of primaries.

Dr. Fixsen records a specimen of *L. amphyssa* from Corea, and remarks that it does not differ from Amurland examples.

*Distribution.* Amur, Corea, and Central China.

### **Limenitis homeyeri.** (Plate XVII. fig. 6, var.)

*Limenitis homeyeri*, Tancré, Ent. Nachr. vii. p. 120 (1881); Staudinger, Rom. sur Lép. iii. p. 144, pl. vii. figs. 2 *a*, *b* (1887).

\* Var. *japonica*, Ménétriés. "Les ailes supérieures ne présentent, des deux côtés vers leur sommet, que deux points blancs au lieu de taches allongées; puis, vers le milieu du bord externe, une tache blanche qui se retrouve en dessous; enfin aux ailes inférieures on ne voit aucune trace de la ligne blanchâtre submarginale qui orne l'espèce de l'Altai."

"En dessous, au lieu des deux lignes marginales blanches qui, chez la *sidi*, longent tout le bord externe des quatre ailes, on ne remarque, vers le milieu de ce bord, que trois taches blanches alignées, qui simulent une partie de la ligne la plus externe, et la seconde ligne marginale ou interne est représentée aux ailes supérieures par une plus grande tache, la même que reparait en dessous, et aux inférieures par deux taches alignées; ces taches sont parallèles à celles de la ligne la plus externe. Du Japon par M. Goschkevitch." (*Ménétriés, Cat. Mus. Petr.*)

- “ Diese neue Art, von der Grösse kleiner *sibilla*, L., ist der *Helmanni* Ld. oben, der *amphyssa*, Mén., unten am ähnlichsten. Flügel braunschwarz mit weisser Fleckenbinde in der Mitte, weisser Strichlinie vor dem Aussenrand besonders der Hinterflügel.
- “ Die Zeichnungsanlage ist also ganz wie bei den genannten drei Arten, jedoch ist alles Weisse viel schmaler und daher zierlicher. Dann unterscheidet sich *Homeyeri* sofort von Ersteren durch die auffallende weisse und grelle Punktlinie der Hinterflügel. Von *amphyssa* trennt sie die weisse Basallinie der Mittelgille der Vorderflügel, die bei *amphyssa* stets durch einen Quersfleck vertreten wird. Dies ist auf der Unterseite fast ebenso auffallend, wo sonst. *Homeyeri* mit *amphyssa* grosse Aehnlichkeit hat. Aber auch hier fällt besonders wieder die weisse Strichlinie in die Augen.
- “ *Helmanni* hat auf der Unterseite einen breiten blaugrauen Innenrand der Hinterflügel, breitere weisse Binde. Die Fühler von *Homeyeri* sind kohlschwarz, wogegen bei den drei vorgenannten gelbliche Spitzen vorhanden sind.
- “ Mit andern Arten ist diese neue nicht zu verwechseln.
- “ Mein Sammler sandte sie mir aus Blagoweschtschensk ein, und Christoph fand sie von Ende Juni bis Mitte Juli bei Raddefskaja.” (*Tancreé, l. c.*)

As my specimens from China are of a different form to that from Amurland figured by Romanoff, I describe it as—

Var. **venata**, var. nov. (Plate XVII. fig. 6.) Larger and blacker. All the white markings are broader, the discal streak widens out to the point of separation from the triangular continuation; the central band of secondaries is straighter, and the submarginal bands on all the wings are well defined. Under surface: the ground-colour is darker, and the markings silky white; the central band of secondaries is much broader, especially towards costa, and very distinctly divided by the black neuration.

Expanse, ♂ 63–72 millim., ♀ 66–72 millim.

One male from Wa-shan and a female from Ta-chien-lu have the markings whiter than usual, and as broad as in the female of *L. helmanni*.

This form is readily separated from *helmanni* by the following characters:—Darker chocolate ground-colour of under surface, and more sharply-defined markings; the transverse white band on secondaries is silvery and more distinctly intersected by the black neuration; the black markings on basal area are linear in *homeyeri*, but round in *helmanni*; fringes are white chequered with black in both species, but in *helmanni* they are wholly white on apices of primaries, and distinctly interrupted with black in *homeyeri*. This last character will usually distinguish Chinese *homeyeri* from *helmanni*.

A specimen of a *Limenitis* from Amurland sent to me by Dr. Staudinger as *L. homeyeri* differs from Tancreé's description of that species in having distinct pale fulvous tips to the clubs of the antennæ. The majority of my

Chinese specimens have the clubs of the antennæ entirely black as in the type, but a few specimens have the extreme apex of club tinged with brown.

Occurs throughout Western China, and is fairly common.

***Limenitis helmanni.*** (Plate XVII. fig. 8, var.)

*Limenitis helmanni*, Lederer, Verh. zool.-bot. Ges. Wien (1853), p. 356, pl. i. fig. 4; Lang, Butt. Eur. p. 216 (1884).

*Athyma pryeri*, Moore, Ann. & Mag. Nat. Hist. (4) xx. p. 47 (1877).

*Limenitis helmanni*, var. *duplicata*, Staudinger, Rom. sur Léop. vi. p. 172 (1892).

“Expands from 1.75 to 2 inches. Blackish brown: fore wings with a central row of six white spots; there are three or four near the apex; there is a white basal streak, and at its outer extremity a triangular white spot, with the apex outwards. Hind wings with a central band made up of six white spots. Underside very like that of *L. sibylla*, but the fore wings have a white basal streak and a triangular spot, and the spots of the ventral row are smaller. Hind wings as in *L. sibylla*, but the central band is narrower and bluer, and the submarginal rows of black spots are wanting.” (*Lang, l. c.*)

Dr. Staudinger (*l. c.*) describes the Amurland form as follows:—

Var. ***duplicata.*** “All the white markings are wider. The spots are generally much larger, the lower spots are broader, and the upper three are more produced; the bands on the secondaries are generally twice, and in some examples three times as broad as in typical *helmanni.*”

This form has not been met with in any part of the region dealt with in the present work.

The Chinese form (Plate XVII. fig. 8, ♂) of this species has been described, under the name of *Athyma pryeri*, by Mr. Moore as follows:—

Var. ***pryeri***, Moore. “*Male.* Near to *A. helmanni* from the Altai, but differs from the same sex of that species in its larger size, the fore wing being more produced at the apex; this wing above having the markings more prominent and longer, and a distinct marginal row of white streaks; the band on the hind wing is also broader, and there is a very prominent marginal row of white streaks. Underside similarly but more prominently marked; the marginal white streaks on hind wing also prominent (these being nearly obsolete, both above and beneath, in *A. helmanni*), with broader interspace between them and the median band. Exp. 2¾ inches.” (*Moore, l. c.*) From the Snowy Valley, Ningpo.

The type of *pryeri*, which appears to be a female, is in the collection of Messrs. Salvin and Godman.

This species varies in the width of the white markings in the same way as its allies. Dr. Fixsen records typical specimens from Corea, where I also met with the species commonly at Gensan, in June and July 1886. I also

took specimens at Fusan, S.E. Corea, and at Nagasaki, Japan. In the Nagasaki specimens the bands and spots are narrower and smaller. *L. helmanni* is common in Central China, and extends into Northern and Western China. Erschoff, according to Staudinger, records this species from East Siberia.

*Distribution.* East Siberia, Altai, Amurland, Japan, Corea, China.

### **Limenitis sibylla.**

*Papilio sibilla*, Linn. Syst. Nat. i. 2, p. 781 (1767); Esp. Schmett. i. 1, pl. 14. fig. 2 (1777); Hübn. Eur. Schmett. i. figs. 103–105 (1794?).

*Limenitis sibylla*, Lang, Butt. Eur. p. 162, pl. xxxviii. fig. 1 (1884); Pryer, Rhop. Nihon. p. 23, pl. 5. fig. 15 (1888).

*Limenitis sibilla*, var. *angustata*, Staud. Rom. sur Léop. iii. p. 144 (1887).

“Expands from 2·0 to 2·25 inches. All the wings brownish black; the margins slightly dentate, and the fringes black and white. Fore wings with a very indistinct light brown discoidal spot; the remaining spots have much the same arrangement as in *Camilla*, but show a greater tendency to form a band; there is no marginal row of purple dots, but there are some faint black ones. The hind wings much resemble those of *Camilla*, but the white band is concave on its outer edge for about two thirds of its length, whilst in *Camilla* it is straight. Under-side brown, with a yellowish or fulvous tinge instead of the red colour found in *Camilla*. The fore wings have a greenish-grey discoidal spot. The hind wings have a double row of black spots running parallel to the hind margin; the base of the wings is greenish, with a pearly lustre and some black spots. Head, thorax, and abdomen brownish black above, greenish white beneath. Antennæ black above, with the extreme tips light brown, beneath they are fulvous.” (*Lang, l. c.*)

*Larva.* Head pinkish brown, darker laterally. Body almost cylindrical, but with the intersegmental spaces strongly marked; the dorsal surface is rough and tuberculated, with small branched spines; the colour on the back is dark green, the sides being paler, and the tubercles yellow. The spiracles are white, and below them is a narrow white lateral stripe. The spines are pink at the tip and brown at the base; their bristles are black.” (*Abridged from Newman’s ‘British Butterflies.’*)

According to Lang, the pupa is brown, with the wing-cases green; the head and ventral surface are decorated with metallic spots.

A more complete life-history of this species is given by Buckler in ‘Larvæ of British Butterflies.’

The Amurland form of this species, to which Dr. Staudinger has given the varietal name *angustata*, has the central white bands somewhat narrower than in the type.

Pryer states that *L. sibylla* occurs in Japan from June to August, and varies

considerably in size and in the white markings of the upperside; the larva feeds on *Lonicera japonica*.

I have observed that in many Japanese specimens, which are rather larger than European, the fourth white spot from the costa of primaries is as large as the rest, thus causing the band to be continuous. As mentioned in my remarks on *L. sydyi*, Ménériés, var. *japonica* appears to be referable to *L. sibylla*.

Widely distributed throughout Japan and Corea, and is common in Amurland and Central Europe. So far this species has not been met with in any part of China.

### **Limenitis ciocolatina.** (Plate XVI. fig. 4, ♂.)

*Limenitis ciocolatina*, Poujade, Ann. Soc. Ent. Fr. 1885, p. cevin.

*Limenitis livida*, Leech, Entomologist, xxiv., Suppl. Feb. p. 27 (1891).

“Envergure: 68 mill.—Forme du *L. populi*, Linn., sauf les ailes supérieures, qui sont un peu plus dentées et plus arrondies à l’apex. Dessus d’un brun chocolat, montrant, par transparence, les taches et bandes du dessous; ailes supérieures ayant à la côte trois taches blanches placées comme chez *L. populi* et deux fines bordures d’un blanc violacé: l’une contre la frange et l’autre qui en est éloignée de 4 millimètres. Ailes inférieures bordées de lunules noirâtres entourées de bandes d’un blanc violacé, disposées comme chez *L. populi*.

“Dessous: base des ailes couleur de terre de Sienne brûlée, et occupée par des lignes noires irrégulières, disposées comme chez *L. populi*; reste des ailes d’un brun clair, sur lequel se détachent les taches et bordures du dessus. Les ailes inférieures sont partagées par une bande diagonale plus pâle, circonscrite entre deux lignes brunes, partant d’une tache blanche située sur le milieu de la côte et se dirigeant un peu au-dessus de l’angle anal; entre cette diagonale et les bordures, il y a une teinte d’un brun rouge velouté.

“Un individu, qui paraît être un ♂, rapporté de Mou-Pin (Thibet Oriental) par M. l’Abbé A. David.” (*Poujade, l. c.*)

*Male.* Velvety black. Primaries have a bluish linear spot in the cell; a slightly curved bluish macular central band, and two blue lines parallel with outer margin; there are also two white spots near costa towards apex. Secondaries have two indistinct pale central lines, and two broad blue marginal lines, preceded by a wavy blue band; at the anal angle there is a reddish spot enclosing a black one. Under surface reddish-chocolate: the primaries have a fuscous-grey patch at the base, limited and dashed with black; there is a somewhat quadrate whitish patch, margined with black, in cell, and a paler patch of the ground-colour, also margined with black, lies at the outer end of cell: the central macular band is white towards costa and inner margin, but suffused with blackish in the middle; there is a submarginal series of blackish spots, preceded on the costa by two white ones, bordered outwardly by a pale fuscous band, which is traversed by a broad line of the ground-colour. Secondaries have some blackish marks on basal area; the central area is traversed by a blackish band, which commences below a whitish spot on costa, and becomes indistinct towards abdominal margin; beyond is a broad band, darker than the ground-colour; the outer fourth of wing is pale

fuscous, intersected by an interrupted blackish band, the anal extremity of which is represented by two velvety-black spots, and a band of the ground-colour.

Expanse 74 millim.

Male specimens were taken at Omei-shan, Wa-ssu-kow, and Pu-tsu-fong in June and July at altitudes ranging from 3000 to 10,000 feet. It seems to be a scarce species, and the female appears to be unknown.

Allied to *L. populi*, var. *tremulæ*, Esp., but is easily separated therefrom.

### **Limenitis pratti.** (Plate XVI. fig. 7.)

*Limenitis pratti*, Leech, Entomologist, xxiii. p. 34 (1890).

Black, inclining to brown towards the base of all the wings. Primaries with a white transverse bar, preceded and followed by obscure whitish ones, in discoidal cell; a central series of six quadrate whitish spots and beyond a transverse series of smaller red spots, the upper of which are round, and the two nearest costa edged internally with white; submarginal spots white, intersected by a line of the ground-colour, that in the second median interspace large and triangular. Secondaries have two black transverse bars enclosing an obscure red one near base; a central series of seven white spots, followed by a series of smaller red ones; outer margin broadly bordered with white, intersected by an interrupted transverse band. Under surface similar to above, but the costa is whitish and the markings are larger, those in the discoidal cell are well defined, and below the cell there is a large white blotch, transversely intersected by a blackish band; secondaries have the costa edged with red, and there are some reddish and black marks on the white basal third; the other markings same as above, but more band-like in character.

Expanse 69 millim.

One example taken in July at Chang-yang.

This species is nearly allied to the Western-Himalayan species *L. trivena*, Moore, of which the following forms have been described:—*ligyes*, Hewitson; *hydaspes*, Moore; and *lepechini*, Erschoff (see de Nicéville, Butt. Ind. ii. p. 161).

### **Limenitis populi.**

*Papilio populi*, Linnæus, Syst. Nat. x. p. 476 (1758); Esper, Schmett. i. pt. 1, pl. 12. fig. 1 (1777); i. pt. 2, pl. 44. figs. 1, 2 (1800); Hübner, Eur. Schmett. i. figs. 108–110 (1794?).

*Limenitis populi*, Lang, Butt. Eur. p. 160, pl. xxxvii. fig. 1 (1884); Pryer, Rhop. Nihon. p. 23, pl. v. fig. 7 (1886).

*Papilio tremulæ*, Esper, Schmett. i. pt. 2, pl. 114. figs. 3, 4 (1800); Lang, l. c. p. 161, pl. xxxvii. fig. 2.

“Expands from 2.50–3 inches. All the wings dull brown. Fore wings with a central row of large white spots, an oblong white discoidal spot and a row of three or four near the apex. Hind wings with a central white band, narrow in the male, but broad and distinct in the female.

All the wings have the hind margin tinged with green, and with a row of orange lunules, complete on the hind wings, but on the fore wings interrupted towards the anal angle. Underside orange, with the spots and stripes greenish; hind wings with a row of blackish spots parallel to the hind margin, and with the inner margin greenish grey." (*Lang, l. c.*)

"*Larva.* Green, mixed with reddish brown and yellowish white, with two rows of fleshy elevations covered with bristles. *Pupa.* Dirty white; thorax with a dark brown dorsal patch; wing-cases dark brown. The larva feeds on *Populus alba* and *P. tremula* in May. It appears first in the autumn, and then hibernates between dead leaves." (*Lang, l. c.*)

Var. **tremulæ**, Esper. A form of the male in which all the white markings are absent, excepting those towards apex, and sometimes even these are obscured.

Referring to the occurrence of *L. populi* in Japan, Pryer (*l. c.*) says that the species has only been observed in the Island of Yesso, and that his collector obtained several specimens there in the year 1882. These specimens are now in my possession, and I do not find that they differ in any way from European examples of the type-form.

In Western China the species appears to be fairly common. I have received specimens from Ta-chien-lu, Wa-shan, Wa-ssu-kow, Pu-tsu-fong, and Ni-tou. All the males are either of the *tremulæ* form, or intergrades between that form and the type. The female, of which sex I have only one Chinese example, agrees with European specimens of this sex, but the white band on secondaries is rather narrower.

This species appears to be widely distributed in Amurland, where the var. *ussuriensis*, Staudinger, which has the white bands in the male as broad as those in the female from Europe, is the dominant form. Dr. Staudinger (*Rom. sur Léop. iii. p. 144*) mentions a very small form of the male from Raddefka, for which he proposes the name of *liliputana*.

### **Limenitis danava.** (Plate XIV. fig. 1, ♂.)

*Limenitis danava*, Moore, *Cat. Lep. E. I. C. i. p. 180, pl. vi. a. fig. 2, ♂ & ♀* (1857); de Nicéville, *Butt. Ind. ii. p. 157* (1886).

"*Male.* Upperside dark olive-brown from base to disc of fore wing, and from base to one third of hind wing, the rest being pale olive-brown; a transverse dark band crossing the disc of fore wing and middle of hind wing; a dark submarginal wavy line and two indistinct inner wavy lines crossing both wings; some indistinct markings within the discoidal cell with paler centres, and a small green patch at anal angle. Underside of a golden-glossed obscure ashy-brown ochreous colour. Fore wing with markings at the base, a transverse row of lunulated marks, and an indistinct submarginal row of very small spots, purple-ashy; also a whitish patch at the apex, and a narrow yellowish line across the disc. Hind wing with broad inner and submarginal band purple-ashy; the latter with small whitish spots along its middle; two marks within and one above the discoidal cell whitish.



“*Female*. Upperside with portions at the base, as in male, dark brownish green; the middle of both wings white, with broad greenish-brown band crossing the disc; exterior margins broadly paler greenish brown, with green patch at the anal angle; markings at base of wings pale. Underside pale greenish yellow, with greenish-golden gloss; bands and markings as on upper-side, but less distinct and whitish.

“*Expanse* 3 to 3½ inches.” (*Moore, l. c.*)

This species occurs at Moupin and Pu-tsu-fong in Western China, and at Chang-yang in Central China. Mr. de Nicéville (*l. c.*) states that *L. danava* has a wide range in the Himalayas, occurring from Masuri to Sibsagar in Upper Assam. Mr. Elwes (T. E. S. 1888, p. 352) says that the species is rare in Sikkim, at elevations up to 7000 feet, from April to October, and that the female is seldom found; my collectors also failed to meet with this sex of *L. danava* in China.

### Genus NEPTIS.

*Neptis*, Fabricius, Illiger's Magazin, vi. p. 282 (1807); Westwood, Gen. Diurn. Lep. ii. p. 270 (1850); de Nicéville, Butt. Ind. ii. p. 75 (1886).

“*BODY* slender; fore wings long; antennæ short; palpi small, hairy, and very acute.

“*HEAD* rather broad, with a frontal tuft.

“*Eyes* large, prominent, and naked.

“*Antennæ* rather short, not half the length of the fore wing; terminated by a short, slender, gradually-formed club, the tip of which is curved outwardly, finely keeled beneath.

“*Labial palpi* small, directed obliquely upwards, scarcely reaching above the level of the middle of the eyes. The terminal joint in the same line as the preceding, compressed, clothed with long loose hairs along the whole of the fore edge, and also on the hinder side at the extremity of the second joint; basal joint short; second joint broader and slightly curved at the base; terminal joint, in the typical species, nearly as long as the preceding, slender, and very acute at the tip.

“*THORAX* rather slender, scarcely broader than the head, oval, very slightly hirsute, often clothed with metallic scales.

“*Fore wings* elongate, triangular. The anterior margin very slightly arched; apical angle rounded. Apical margin rounded, not, or but slightly, sinuated. Inner margin three fourths of the length of the anterior, more or less emarginate towards the middle. Costal vein moderately strong, not extending to the middle of the costa. Subcostal vein slender; its first branch arising at about one third of the length of the wing, and uniting with the costa a little beyond the middle; second branch, in the typical species, arising close beyond the first, before the anterior extremity of the discoidal cell; third branch arising at about two thirds of the length of the wing, and extending to the tip; fourth branch arising at about three fourths of the length of the wing, and reaching to the apical margin below the apex, the apical portion of the vein being deflexed. Upper discocellular vein almost obliterated, arising close beyond the origin of the second subcostal branch; middle discocellular short,

arched towards the base of the wing in the typical species; lower discocellular obsolete, so that the discoidal cell is open, its place often indicated by a dark bar having a slightly curved paler line dividing the pale discoidal patch into two parts, and extending to the median vein just before the origin of its third branch, which is slightly arched.

“*Hind wings* very oval; the costal margin much arched; the outer margin rounded, slightly scalloped. Precostal vein forming a short straight spur, forked at its extremity; costal vein slightly curved, reaching only to the middle of the costal margin; subcostal vein arising from the costal just beyond the origin of the precostal, and emitting its branch almost at its base. The upper discocellular forming the curved base of the discoidal vein; the lower discocellular wanting, so that the narrow discoidal cell is open. Median vein branching below the branches of the subcostal vein, with the spaces between the extremities of the branches along the outer margin of the wing wider than usual, in consequence of the costal vein extending only to the middle of the costa.

“*Fore legs* of the male very slender and short, more or less clothed with very delicate white hairs; femur slightly curved; tibia scarcely half its length; tarsus very short, not above one third of the length of the tibia, forming a minute, oval, exarticulate joint, destitute of claws. Of the female more robust, and much longer than those of the male, scaly, with but few fine hairs; femur slightly curved; tibia also a little curved, about two thirds of the length of the femur; tarsus nearly as long as the tibia, well articulated; the basal joint half the length of the tarsus, the remainder rather dilated, with strong spines on the inside; the terminal joint minute, spined, but without claws.

“*Middle and hind legs* rather short, scaly; tibia spined beneath, with long tibial spurs; tarsus with four rows of strong spines beneath; claws rather long and very much bent, and acute at the tip; paronychia and pulvillus small.

“*ABDOMEN* slender, elongated.

“*LARVA* slightly elongated; head armed above with two short conical points; second and third segments of the body with a pair of diverging, obtuse, setose, fleshy spines, the hinder pair being the largest; an erect tubercle near the extremity of the body. *Pupa* with the head bifid, and with the base of the abdomen-case much swollen.” (*Westwood, l. c.*)

Representatives of this genus are found in all the warmer portions of the Old World.

### **Neptis thisbe.** (Plate XVIII. figs. 8, 10, vars.)

*Neptis thisbe*, Ménétrics, Bull. Acad. Petr. xvii. p. 214 (1859); Schrenck's Reisen, ii. p. 26, pl. 2. fig. 9 (1859).

*Neptis thisbe*, var. *themis*, Lecch, Entomologist, xxiii. p. 35 (1890).

*Neptis thisbe*, var. *thetis*, Lecch, l. c.

“*Alis* subdentatis, fuscis; anticis, linea longitudinali integra, fascia marginali valde interrupta, posticis fascia media, fulvo-flavis, his fascia submarginali fusco-cinerascente; subtus, alis castaneo-flavescentique variegatis, fasciis et margine exteriore dilutioribus.” (*Ménétrics, l. c.*)

This species occurs at several places in Western China during July and August at various elevations from 5000 to 10,000 feet. In Central China it

occurs at Ichang and Chang-yang, very common at the latter locality, from June to August up to about 5000 feet.

Although fairly constant on the upper surface, considerable variation is exhibited on the underside. The bulk of the specimens are of the typical form, and agree well with examples from the Amur. There are, however, two well-defined forms which I described in the 'Entomologist' for 1890 as var. *themis* and var. *thetis*.

Var. **themis**. (Plate XVIII. fig. 8, ♀.) Fringes of primaries almost wholly white at the apex, and black from the fifth subcostal nervule to below first discoidal nervule; there is no trace of fulvous on the outer margin of secondaries. On the under surface of primaries the spot between discoidal nervules is large, round, and without a trace of marking below it in next interspace; the central band of secondaries terminates in a large white spot between the subcostal nervules, and there are no markings in the interspace above or between the band and discoidal streak, which in this form is distinctly white.

Several specimens from Chang-yang, and a few from Moupin.

Var. **thetis**. (Plate XVIII. fig. 10, ♂.) Identical with var. *themis* above, but beneath there is a white mark in interspace below the outer round spot of primaries; the discal streak and submarginal band of secondaries are merely fragmentary; the basal and terminal portions of the former only remain, and of the latter there are some traces towards outer angle. There is also a noticeable absence of brown clouding on secondaries, and the brown band posterior to the white central one is very narrow.

Occurs at Pu-tsu-fong, Ta-chien-lu, and Chang-yang.

In some examples of the type-form the bands are very pale, almost white, but this is probably due to the insect having been on the wing some time.

Dr. Staudinger\*, who states that *N. thisbe* is peculiar to Amurland, also records a white-marked form of the species from that region.

*Distribution*. Amurland and Western and Central China.

### **Neptis arachne.** (Plate XVIII. fig. 7, ♂.)

*Neptis arachne*, Leech, Entomologist, xxiii. p. 38 (1890).

*Neptis giddeneme*, Oberthür, Etud. d'Entom. xv. p. 9, pl. i. fig. 7 (1891).

Resembles *N. beroe* and also *N. aspasia* in the markings of upper surface, but it lacks the central streak of the former, and the apical spots are more clearly separated in the latter, whilst it differs from both in the rupture of discal streak from its continuation at second median fork. In this species the disconnection is effected, not only by the passage of the third median nervule, but by the interposition of a triangular patch of the ground-colour in the fork. Under surface bright chestnut-brown. Primaries ochreous at base and along costal fold, a

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\* Rom. sur Lép. vi.

bluish-grey discoidal spot, some ochreous scales at the commencement of the discoidal nervules and a suffused ochreous mark to discal streak below; beyond is a curved series of four large bluish-grey spots, and nearer the apex a pale ochreous spot, above which are some ochreous streaks; dentated submarginal line ochreous, narrowly edged internally with ground-colour, preceded by some ochreous suffused patches, and bordered externally by a band of the ground-colour; outer margin broadly ochreous, intersected by a transverse interrupted line of the ground-colour; discal streak and curved continuation pale ochreous, enclosed space blackish grey, which colour is continued below the first median nervule to border of outer margin: secondaries ochreous, basal half of costa tinged with chestnut; a broad suffused patch of bright chestnut-brown from outer half of costa to discoidal nervule, and from thence continued as a narrow band to abdominal margin, the patch encloses some bluish-grey marks, and there are some chestnut spots towards base; broad central band pale ochreous, suffused with dark grey beyond the third median, and bordered externally with bright chestnut-brown, this is followed after an interval by a narrow transverse band of the same colour, and the sinuous submarginal line is also chestnut-brown. Fringes white, with black patches at extremities of nervules, that at fourth subcostal is small, whilst those of second and third median nervules approximate, leaving a very slender space of white.

The *female* differs from the male only in having rounder wings and in being of larger size.

Expanse, ♂ 76-82 millim., ♀ 88 millim.

Occurs at Omei-shan, Wa-shan, and Wa-ssu-kow in Western China at elevations ranging from 3000 to 6000 feet. I received one male specimen from Chang-yang; and M. Oberthür describes a specimen from Tsé-kou as *N. gidddeneme*.

### ***Neptis antigone.*** (Plate XVIII. fig. 6, ♀.)

*Neptis antigone*, Lecch, Entomologist, xxiii. p. 37 (1890).

*Female.* Very similar to *N. aspasia* on the upper surface, but the spot in first median interspace forming continuation of discal streak is larger, rounder, and more completely isolated, whilst the costal band of secondaries is broader, and traverses the wing from abdominal margin, where it is but slightly paler, to middle of subcostal nervure, the submarginal band is also much broader, and commences below the subcostal nervure. Under surface dark ochreous brown, the discal streak proper and a portion of the extension are much suffused with this colour, the spot below in first median interspace is fairly distinct, and only separated by the first median nervule from a white dash extending to inner margin, the enclosed space is black; a curved series of four blue-tinted white spots from middle of costa and a large white one beyond; an obscure brown narrow band commences on the costa, skirts the external edge of white spot, and then turns outwards and downwards parallel with outer margin, terminating in a black cloud on inner margin: secondaries paler towards base; central band tinged with violet and bifurcated towards costa, followed by a broad bluish-grey line; submarginal band white, tinged with violet, and intersected by a transverse line of the ground-colour; there are some indications of a line parallel with outer margin. Palpi white, with black hairs; eyes brown.

Expanse 78 millim.

One example, Ichang, May.

**Neptis aspasia.** (Plate XVIII. fig. 5, ♂.)*Neptis aspasia*, Leech, Entomologist, xxiii. p. 37 (1890).

*Male.* Black, tinged with brown; markings yellow. Discal streak of primaries interrupted at the fork by the third median branch, the continuation has its external edge gently curved, and below its extremity is a nearly round spot in the first median interspace. Secondaries broadly cinereous along costal third; central band, which is white on the abdominal fold, runs straight towards outer margin, but is interrupted by the costal border; submarginal band tapers from outer angle, the upper portion obscured by costal border. Under surface chestnut-brown, inner portion of primaries below discal streak and curved extension leaden grey; some violet-grey spots from middle of costa, a large white spot below submedian, and a violet-grey dash above, together with an ill-defined pale violet spot in discoidal interspace are edged externally by an undulated transverse dusky line; parallel with the outer margin is an interrupted pale violet line: secondaries, white central band, bordered on each side with blackish-grey, curves upwards from second subcostal nervule in the direction of outer angle, and is followed by two wavy narrow greyish bands, each bordered with darker; submarginal band pale violet, bordered with greyish, tapering from outer angle; an indistinct grey line parallel with outer margin. Fringes white, with patches of black at tips of nervules, preceded on the under surface by a broad dark line. Palpi pale grey, with dense black hairs. Eyes plum-colour.

*Female* has the wings rounder, and the secondaries are without the broad cinereous costal border of the male.

Expanse, ♂ 86-92 millim., ♀ 85-92 millim.

Not uncommon at Omei-shan, Western China, and occurs more sparingly at Chang-yang, Central China, in July. I have also received specimens from the Province of Kwei-chow taken by a native collector.

**Neptis beroe.** (Plate XVIII. fig. 9, ♂.)*Neptis beroe*, Leech, Entomologist, xxiii. p. 36 (1890).

*Male.* Brownish black, with yellow markings. Primaries have a broad discal streak interrupted by the third median branch, and continued downwards as a curved spot, which is interrupted by the second median branch and terminates at the first; below is a somewhat triangular patch intersected by the submedian nervure; towards the apex are two large oblong spots, separated by the subcostal nervure from a long streak on the costa. Secondaries have broad central and narrower submarginal bands; the costa is broadly glassy. Under surface pale fulvous, outer margins of all the wings paler; primaries have curved discal streak and spots on inner margin as above, but whitish in colour, the lower spot of the two towards apex is obscured by a greyish suffusion, and the same colour replaces the linear yellow patch on costa; between these spots and two indistinct ones just below middle of costa is a bright chestnut-brown cloud, the narrow submarginal band terminating in a dark grey cloud on inner margin is of the same colour, and is bordered externally with whitish: secondaries tinged with greenish between costal and second subcostal nervule to beyond the middle, where there is a small bright chestnut-brown cloud; the white central band is suffused with greyish at its outer extremity, and has a clouded brownish edging; submarginal band whitish with a violet

tinge, interrupted by the nervules, bordered on each side with dark grey, and preceded by a bright chestnut-brown band tapering from the outer angle to inner margin. Fringes white-chequered, except at fourth subcostal, with black patches at the extremities of the nervules.

*Female*. Darker; streak and bands narrower, spots rather smaller, the patch on costa of primaries represented by a small linear spot and some yellow scales; the costal border of secondaries is not glassy. The under surface is more suffused with bright chestnut-brown, the space enclosed by curved discal streak is black, slightly glossy towards base.

Expanse, ♂ 68 millim., ♀ 70 millim.

This species has only been received from Chang-yang, where it occurs in June, but appears to be rare.

### **Neptis hesione.** (Plate XVIII. fig. 1, ♂.)

*Neptis hesione*, Leech, Entomologist, xxiii. p. 34 (1890).

*Male*. Fuliginous black, with pale buff markings. Discal streak of primaries broad, partially suffused with blackish, the outer extremity produced and obtusely pointed, two spots near apex, oval and of nearly equal size, separated from each other by the first discoidal nervule, and from an indistinct curved linear spot by the subcostal nerve; a spot in the first median interspace is nearly round and touches both nervules, below are two smaller spots separated by the submedian; submarginal band pale and narrow. Secondaries have a fairly broad central band; the submarginal band tapers from costa, attains its greatest width in the submedian interspace, and from thence is attenuated to abdominal margin; between the bands is a transverse series of oblong black spots: there is a broad leaden-grey streak along the costa of secondaries, obscuring the upper part of yellow central band. Under surface chocolate-brown; markings white, streaked with ochreous grey, and clouded with whitish along the costa; discal streak broad, clear and distinct, with a large blackish patch below; apical spots hardly separated; spot in first median interspace invades the space above and unites below with the enlarged pair on inner margin; submarginal line white tinged with violet, interrupted towards apex by two longitudinal streaks of the ground-colour, and preceded by a chocolate-brown band, which is narrowly edged inwardly with blackish grey and intersected by a transverse series of pale lunules. Secondaries with basal, central, and submarginal bands; the first traverses the wing from base to costal nerve, where it is cut into by the ground-colour; the second is bordered externally with blackish grey, followed by ochreous grey; the third is tinged with violet, preceded by an interrupted band of the ground-colour, bordered with ochreous grey and followed by a series of lunules, also of the ground-colour, edged externally with whitish. Fringes chequered black and white.

*Female* is rounder in the wing; the yellow markings are similar to those of the male, but there is no leaden streak on costa of secondaries.

Expanse, ♂ 60-66 millim., ♀ 62-72 millim.

Closely allied to *N. armandia*, Oberthür, but differs from that species on the upper surface in the broader discal streak, closer proximity of the apical spots, and pale submarginal band of primaries; also in the broader central and

uninterrupted submarginal bands of secondaries, whilst on the under surface there are several points of difference.

Occurs at Chang-yang, Central China, and at Wa-shan, Chia-kou-ho, and Moupin in Western China.

### **Neptis armandia.**

*Limenitis armandia*, Oberthür, Etud. d'Entom. ii. p. 23, pl. iv. fig. 4, *a, b* (1876).

Brownish black. Primaries have a yellow discal streak terminating in a pointed head; an oblique series of three yellow spots towards apex, the middle one fairly large and the upper one minute; a large yellow spot between the first and third median nervules, its upper portion intersected by the second median, and a short oblique yellow dash on inner margin; an obscure pale submarginal line is preceded by a blackish band. Secondaries have two transverse yellow bands, the inner appearing to be a continuation of the dash on inner margin of primaries. Fringes white, marked with blackish. Under surface of primaries chocolate-brown; the discoidal cell is filled up with yellowish, and this colour extends from the cell to the costa; there is a series of three or four small whitish spots beyond the cell and near the costa; a large yellowish spot towards apex, and above it are some streaks of the same colour; below this spot and nearer the outer margin there is a whitish or pale lilacine one; a yellow spot is placed between the median nervules as above, from its inner edge a blackish triangular streak extends to the base of the wing; two wavy pale submarginal lines enclose a band of the ground-colour; both lines are yellowish from costa to whitish spot, where they are whitish tinged with lilac, but from this point the inner line becomes indistinct: secondaries are yellowish, with a short zigzag chocolate-brown mark from before the middle of costa; a broad oblique central pale band, edged internally with brownish, is followed by a broader band of chocolate-brown; this band is traversed by a serrated lilac-tinted whitish line, which expands towards inner margin, where it terminates in a large blotch; the narrow and wavy brownish submarginal line is inwardly bordered with whitish lilacine towards costa.

Expanse 62-68 millim.

Closely resembles *N. antilope*, Leech, but on the upper surface the discal streak is narrower and the third spot of apical series is smaller and well separated from the second; the central yellow band of secondaries is also narrower. On the under surface of primaries it differs from *antilope* in having a whitish or pale lilacine spot and wavy submarginal lines; and on that of secondaries by the zigzag brown mark and serrated transverse lilacine lines.

Two specimens from Wa-shan and one from Chang-yang have the markings on upper surface broader and paler yellow, and three examples from Omei-shan have the yellow spots at apex and between median nervules smaller than usual. M. Oberthür does not mention where his type of *N. armandia* came from, but it was probably received from Moupin.

Occurs in Central China at Chang-yang, and in Western China at Omei-shan, Wa-shan, and Moupin (?).

**Neptis cydippe.** (Plate XVIII. fig. 4, ♂.)

*Neptis cydippe*, Leech, Entomologist, xxiii. p. 36 (1890).

Similar in size and shape to *N. thisbe*; the markings, however, are very like those of *N. antilope* on the upper surface, but there are three pale spots from middle of costa of primaries, and the costal spot of apical trio is much larger. Under surface of primaries chocolate-brown, suffused with pale ochreous between costa and discal streak; outer margin broadly bordered with the same colour, intersected by a narrow interrupted chocolate-brown band; inner margin to median and first branch dark grey, a blackish patch above in first median interspace; some violet-tinted whitish spots from costa to outer end of discal streak; apical spots whitish, as also are those in the median interspaces, but the outer edges of these last are more or less encroached upon by the marginal border. Secondaries pale ochreous tinged with brownish, and clouded with chocolate-brown on outer portion of costa; some violet-grey and chocolate-brown marks between the costal and second subcostal veins; central band whitish, bordered externally by a suffused chocolate-brown band, the outer edge of which is irregular; beyond are some chocolate-brown spots, followed by a pale transverse band and some obscure brown spots.

Expanse, ♂ 70-77 millim., ♀ 84 millim.

Occurs at Chang-yang in Central China, and also at Wa-shan and Pu-tsu-fong in Western China.

**Neptis thestias**, sp. nov. (Plate XVIII. fig. 3, ♂.)

*Male.* Allied to *N. zaida*, Doubleday, but the markings on upper surface are yellow as in *N. antilope*, which species it also greatly resembles in many respects; the outer third of discal streak, which terminates in a produced point, is broader than the basal two thirds, and the central band of secondaries is very little broader than the submarginal band on those wings. All the wings have an obscure pale marginal line. Under surface of primaries chocolate-brown; discal streak pale yellowish; apical macular streak whitish; a pale yellowish spot between the first and third median nervules has its upper portion intersected by the second median nervule; below it is a smaller spot in the submedian interspace: the bands on secondaries are rather narrower than in *N. zaida* and more oblique; the central one is tinged with yellowish and edged externally with blackish; the submarginal is tinged with lilacine, distinctly interrupted by the nervules, and is preceded by a broad chocolate-brown band, which tapers towards the extremities; marginal line formed of pale chocolate-brown lunules faintly edged externally with lilacine.

*Female.* Similar to the male, but larger, and the marginal line on upper surface of all the wings is yellowish in colour and more clearly defined.

Expanse, ♂ 78 millim., ♀ 87 millim.

Occurs at Omei-shan in July and August at an elevation of 3600 feet.



**Neptis antilope.** (Plate XVIII. fig. 2, ♂.)

*Neptis antilope*, Leech, Entomologist, xxiii. p. 35 (1890).

Black, with a slight brownish tinge; markings yellow. Discal streak of primaries obtusely pointed, two oblong spots and a dot above towards apex, an oval spot below intersected by second median nervule, and a wedge-shaped one on inner margin interrupted by the submedian nervule; submarginal band pale and narrow: secondaries have central and submarginal bands; the former is somewhat narrow, and the latter tapers towards either extremity. Under surface of primaries chocolate-brown, a broad patch of yellowish occupies the space between costa and median nervule, absorbing the paler discal streak; the outer limit of this patch is marked by some whitish spots, and the upper portion of black suffused patch, which lies between median nervule and inner margin, extends to the narrow reddish-brown submarginal band, and encloses a large yellowish-white spot; outer margin has a broad yellowish border, intersected by one paler and one darker indistinct line; the apical portion of the border extends inwards and amalgamates with the two oblong spots: secondaries yellowish; central band white, edged externally with blackish grey, and followed by a chocolate-brown wavy band, the upper portion of which is broadly bordered with violet-grey; submarginal band light chestnut. Fringes white, with black patches at tips of nervules.

Expanse, ♂ 58–67 millim., ♀ 67 millim.

This species superficially resembles *N. thisbe*.

Occurs at Chang-yang, Omei-shan, Chia-kou-ho, and Wa-ssu-kow, but is not common in any of those places. I took two specimens at Hong-kong in March 1886, which are smaller than those from Central and Western China.

**Neptis ananta.** (Plate XIX. fig. 2, var.)

*Neptis ananta*, Moore, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 166, pl. iv. a. fig. 3 (1857); de Nicéville, Butt. Ind. ii. p. 85 (1886).

“Upperside brownish-black; markings ferruginous. Fore wing with discoidal streak straight; a curved twice-interrupted band from anterior margin near apex to middle of posterior margin; a pale marginal line. Hind wing with rather broad inner and narrow outer band, both extending across the abdominal margin; also a pale marginal line, and line between the bands. Underside very deep ferruginous. Fore wing with discoidal streak, spots near apex and from posterior margin ferruginous white; posterior margin broadly patched with black; a marginal and submarginal bluish-ashy line. Hind wing with inner band white, outer band grey and indistinct; a marginal line and zigzag line between the two bands bluish ashy.”  
(*Moore, l. c.*)

“*Female* has the markings rather broader and paler than in the male.” (*de Nicéville, l. c.*)

Expanse 64–72 millim.

Mr. de Nicéville (*l. c.*) says:—“The Western-Himalayan specimens of *N. ananta* differ from those from Sylhet and Assam in having the bands of the upperside much paler; in the former they are ochreous, in the latter

ferruginous. On the underside also the same differences occur in the colour of the ground, the more eastern being much darker."

*N. ananta* appears to be rare in China, as I have only received it from Omei-shan and Chia-kou-ho. At the former place two distinct forms occur.

One of these is typical in most respects, but the submarginal band is represented by three (rarely four) spots near apex; the first is linear, and the third usually round, a round spot in first median interspace, and a short oblique streak from inner margin intersected by submedian nervure; the central band of secondaries is narrower and becomes whitish on the abdominal fold. On the under surface these specimens agree with Kulu and (some) Sikkim examples in having white subapical spots on primaries; but, as on the upper surface, the central band of secondaries is narrower than in the type or any Indian form that has come under my notice. The under surface coloration of this form seems to vary considerably: of three specimens from Omei-shan one is dark ochreous brown, another is chocolate-brown, agreeing in this particular with some Sikkim *N. ananta*; the third is ferruginous-brown, not so deep as in the type, but similar to Kulu specimens.

The other form exhibits such well-defined aberrant characters that I consider it expedient to describe it as—

**Var. chinensis**, var. nov. (Plate XIX. fig. 2.) Larger than typical *ananta*. On the upper surface the markings are yellow; the discoidal streak of primaries and submarginal band of secondaries are broader: on the under surface the discoidal streak and spot in first median interspace of primaries and the central band of secondaries are white; the submarginal band of secondaries is much broader than in the type, pale greyish in colour and edged on each side with dark grey.

Expanse, ♂ 74–76 millim., ♀ 78–82 millim.

I have four males and three females of this form, which were taken in July at Omei-shan at an elevation of about 4000 feet.

Occurs in Western China, Yunan, Assam, Sylhet, and the Himalayas.

### **Neptis miah.** (Plate XIX. fig. 3.)

*Neptis miah*, Moore, Horsfield & Moore, Cat. Lep. Mus, E. I. C. i. p. 164, pl. iv. a. fig. 1 (1857); de Nicéville, Butt. Ind. ii. p. 85 (1886).

"Upperside brown-black. Fore wing with a longitudinal streak from base of wing, an oblique transverse short apical fascia, which nearly meets a reversely-oblique fascia on posterior margin, rufous. Hind wing with a nearly straight broad inner band, and a narrow submarginal band, rufous. Underside dark ferruginous: fore wing with the longitudinal and oblique

marks pinky white; two narrow submarginal lines purple; hind wing with inner band pinky white; two submarginal and a less distinct middle line purple; costal margin at the base whitish. Expanse of wings  $2\frac{2}{3}$  inches." (*Moore, l. c.*)

In Chinese specimens the submarginal rufous band of secondaries is very little narrower than the central band, and this last is not quite so wide as in Indian specimens.

I have only received *N. miah* from Moupin, Omei-shan, Wa-ssu-kow, and Pu-tsu-fong in Western China, where it occurs in June and July at altitudes ranging from about 4000 to nearly 10,000 feet.

Referring to the distribution of the species in India, Mr. de Nicéville (*l. c.*) says that it is fairly common in Sikkim throughout the summer, and adds:—"I have taken numerous male examples in October, sucking up moisture from damp sand in the beds of streams."

*Distribution.* Sikkim, Bhutan, Khasi Hills, Chittagong, Upper Tenasserim, Western China.

### **Neptis amba.** (Plate XIX. fig. 1, var.)

*Neptis amba*, Moore, Proc. Zool. Soc. Lond. 1858, p. 7, pl. xlix. fig. 4; de Nicéville, Butt. Ind. ii. p. 88 (1886).

? *Limenitis antonia*, Oberthür, Etud. d'Entom. ii. p. 22, pl. iv. fig. 3 (1876).

"*Male.* Upperside smoky brown; markings white. Fore wing with long discoidal streak indented at the extremity of the cell; two oblique spots near the apex, and four reversely-oblique spots to middle of posterior margin; an indistinct marginal and submarginal black line. Hind wing with rather broad inner band and narrow brownish-white outer band; marginal and submarginal band darker. Underside dark ferruginous; markings as on upperside, but the marginal and submarginal lines, base of costal margin, and streak near base of hind wing also white." (*Moore, l. c.*)

The *female* has the outer margin of primaries rounder, but does not otherwise differ from the male. Expanse, ♂ 74–80 millim., ♀ 80 millim.

In some examples of *N. amba* from Western China all the markings on upper surface are yellow, but paler in some specimens than in others. In all the central band of secondaries becomes whitish on the abdominal margin. The under surface is usually as in the type, but sometimes the markings on primaries are slightly tinged with yellowish. Mr. Moore has in his collection two specimens of this species from Nepal, in which some of the markings are faintly tinged with yellow.

The yellow form of *N. amba* (Plate XIX. fig. 1) agrees very well with

Oberthür's figure of *Neptis (Limenitis) antonia*\* on the upper surface, which alone is figured, and is probably identical with that insect, although on the under surface it does not quite tally with the description of *antonia*, which is a difficult one to comprehend.

Both forms of this species occur at Omei-shan and Wa-shan, but I have received the yellow form only from Moupin and Chia-kou-ho. The typical form alone appears to be found at Chang-yang in Central China.

*Distribution.* N.W. Himalayas, Nepal, Yunan, Western and Central China.

### **Neptis philyroides.**

*Neptis philyroides*, Staudinger, Rom. sur Lép. iii. p. 146 (1887); Fixsen, op. cit. p. 294, pl. xiv. figs. 1 *a*, *b*.

"Same size as *N. philyra*, and differs principally from that species in having two small white linear spots placed, one below the other, on the costa of primaries before the white macular band, and five or six lunular white spots before the outer margin. In *N. philyra* there are but two or three lunular whitish marginal spots, and these are indistinct. On the under surface the ground-colour is light yellowish brown (almost with a greenish tinge) in *philyroides*, and a darkish dirty brown in *philyra*; the white markings are very similar, but *philyroides* has the extra costal spots as on upper surface.

"The scarcer females are exactly like the males in colour and markings, but larger in size.

"One male specimen from the Ussuri has very conspicuously large white markings." (*Staudinger, l. c.*)

Expanse 64–70 millim.

Dr. Fixsen (*l. c.*) records a female example from Corea which he says is larger than Amurland specimens. The figure of this example, measured from centre of thorax to tip of fore wing and the result doubled, has an expansion of 75 millim.

### **Neptis excellens.**

*Neptis excellens*, Butler, Cist. Ent. ii. p. 282 (1878); Pryer, Rhop. Nihon. p. 24, pl. 6. fig. 2 (1886).

"*Female.* Wings above black-brown; sinuations of the fringes white; primaries with a narrow white streak from the base (widening beyond the middle, notched at the end of the cell, and then tapering to a point), just above the median vein; an irregular interrupted discal series of white spots, the first of which is an oblique subcostal dash or abbreviated line, the second, third, and fifth are large, more or less pyriform spots, the fourth and sixth are smaller, and the seventh is a bifid oblique internal dash; two white submarginal dots, one opposite to the third and one to the sixth of the discal series; secondaries with a rather wide straight white belt across the basal third, and running from near the middle of the subcostal vein to the inner

\* Etud. d'Entom. ii. p. 22, pl. iv. fig. 3 (1876).

margin near the base ; a discal series of white spots slightly diverging from the white belt towards the inner margin, where they are only separated by the veins : wings below red-brown ; the white markings of the upper surface much widened ; the discal spots of primaries almost forming a continuous belt ; a complete submarginal series of whitish spots, but only the third, sixth, and seventh large and white ; internal area dark, subcostal vein and base of cell whitish ; secondaries with a white subbasal patch, silvery bluish internally ; the white belt continued upwards at an angle to the costal vein, a lilacine streak between it and the discal series of spots ; a submarginal series of lilacine lunules. Expanse of wings 3 inches 2 lines. Tokio." (*Butler, l. c.*) [The above description was taken from a coloured drawing.]

According to Pryer this species is exceedingly rare, and has been found in July at Fuji-san, Asama-yama, Nikko, and Yesso.

*N. excellens* differs from *N. phillyroides*, Staudinger, in the deeper colour of the underside, the different shape of the costal spots of transverse series, and absence of the white spots from middle of the costa.

### **Neptis alwina.**

*Limenitis alwina*, Bremer & Grey, Schmett. Nord-China's, p. 7, pl. i. fig. 4 (1853) ; Mén. Cat. Mus. Petr., Lep. pt. 2, pl. ix. fig. 1 (1857).

*Limenitis kæmpferi*, de l'Orza, Lép. Jap. p. 24.

*Neptis alwina*, Pryer, Rhop. Nihon. p. 24, pl. 6. fig. 4 (1886).

"Alis supra : nigris ; anticis albo-maculatis, nec non apice ultimo, vittaque elongata albis ; posticis fasciis duabus albis ; subtus : brunneis, maculis, fasciis vittisque elongatis albis.

"Expans. alar. antic. unc.  $2\frac{1}{2}$ ." (*Bremer, l. c.*)

*Kæmpferi*. "Alæ subdentatæ supra fusco-nigræ, subtus subferrugineæ utrinque fascia media maculari, punctisque marginalibus albis : anticarum linea basilari alba interrupta."

"Le dessus des ailes est d'un brun noir, avec une bande discoïdale blanche, coupée par des nervures sur les inférieures, fortement interrompue sur les supérieures, où elle est formée de cinq taches, dont une très-petite ovale sur le bord interne. Ces mêmes ailes offrent à la base une raie blanche longitudinale suivie d'une grosse tache, qui n'en est que l'interruption, et vers le bord marginal des quatre, on voit une série de lunules blanches précédées et suivies de l'apparence d'une raie grisâtre très-obsolète et peu distincte. Le dessous est d'un brun roux avec les mêmes bandes qu'en dessus, mais ici les deux lignes obsolètes sont blanches et bien indiquées, et les ailes postérieurs sont marquées vers la base de deux raies blanches, dont une, plus courte, tout-à-fait sur le bord marginal. Les échancrures des ailes sont blanches. Un seul individu femelle." (*de l'Orza, l. c.*)

Occurs throughout China, from Ningpo to Moupin, also in the Corea and Central Japan. Alphéraky records a male from Mongolia (Rom. sur Lép. v. p. 109).

### **Neptis mahendra.** (Plate XIX. fig. 5, var.)

*Neptis mahendra*, Moore, Proc. Zool. Soc. Lond. 1872, p. 560, pl. xxxii. fig. 3 ; de Nicéville, Butt. Ind. ii. p. 104 (1886).

“*Male and female.* Upperside black: wings elongated, as in the European *N. aceris*; markings white, and disposed as in that species, but more prominent and broader than in any known allied species of this group, being broader even than in *N. nandina*. Underside deep brownish ferruginous; markings white, broad, their borders imperceptibly black-margined, not prominently so as in *N. astola* or *N. varmona*: middle band of hind wing narrowing to abdominal margin.” (*Moore, l. c.*)

Chinese examples have the submarginal line of secondaries straighter from apex to anal angle and a narrower outer discal band. Notwithstanding these differences I have no doubt that they are referable to *N. mahendra*, with the type of which, in Mr. Moore's collection, they have been compared. I describe this form as—

Var. **extensa**, var. nov. (Plate XIX. fig. 5.) *Male.* Differs from the type in the shape of the spot forming the continuation of the discoidal streak of primaries; the white bands of secondaries are narrower and their edges straighter. On the under surface of secondaries there are two greyish-white bands on outer margin.

*Female* larger than the male, but does not differ from that sex in colour or marking.

Expanse, ♂ 64–70 millim., ♀ 74 millim.

Occurs at Wa-shan, Wa-ssu-kow, Ni-tou, Pu-tsu-fong, Moupin, and Omei-shan in Western China, and is common in all these places up to an elevation of 9000 feet.

*N. mahendra* has only been recorded from the North-west Himalayas.

### **Neptis eurynome.** (Plate XIX. figs. 6 ♂, 4 var.)

*Papilio leucothoë*, Cramer (*nec* Linn.), Pap. Exot. iv. pl. 296. figs. E, F (1780);  
Donovan, Ins. China, pl. 37. fig. 3 (1799).

*Limnitis eurynome*, Westwood, Donovan's Insects China (2nd ed.), p. 66, pl. 35. fig. 4 (1842).

*Neptis sangaica*, Moore, Ann. & Mag. Nat. Hist. (4) xx. p. 47 (1877).

“*Alis* dentatis supra fusco-nigris, subtus fulvis; fasciis interruptis macularibus albis, subtus fusco cinetis, anticis fasciâ longitudinali baseos è maculis duabus triangularibus compositâ. Expans. alar. 2½ unc.

“The wings dentate, brownish black above, fulvous beneath, with interrupted white maculated bands, which on the underside are edged with brown; the anterior have also a longitudinal basal fascia, composed of two triangular white spots, the bases of which are opposed to each other. Expanse of the wings 2½ inches.” (*Westwood, l. c.*)

Var. **sangaica**, Moore. (Plate XIX. fig. 4.) “*Male and female.* Upperside black, markings white; fore wing with short discoidal streak and large contiguous spot, a discal transverse curved series of broad spots, and a marginal row of prominent small lunular spots; hind wing with broad subbasal incurved band, and a broad outer maculated band. Underside

dark ferruginous; fore wing with black-bordered markings as above; hind wing with black-bordered markings as above, also two short basal white streaks, an ill-defined white lunular line between the two broad bands, and a narrow whitish line on the extreme outer margin. Expanse, ♂ 2, ♀  $2\frac{3}{8}$  inches.

“Snowy Valley, Province Chekiang.

“Most nearly allied to *N. alompra*, from Assam, and quite different from *N. eurynome*; may be distinguished by the absence on both the upper and underside of the hind wing of the narrow submarginal white lunular line.” (*Moore, l. c.*)

*Sangaica* appears to be the spring form of *N. eurynome*, and differs from the type-form chiefly in its general smaller size and in the narrower bands on the under surface of secondaries; the whitish submarginal band is usually absent, and the whitish line between the bands is often eliminated. My specimens vary from 54–62 millim. in expanse. I have only received this form from Central and Eastern China, where it seems to be common.

*N. eurynome* can be separated from all its other Chinese allies by the distinct black edging to the white markings of the under surface and the more yellowish ground-colour. It varies considerably in the width of the bands and size of the spots, and ranges in expanse from 64–75 millim.

*N. varmona* and several other Indian *Neptis* are probably only forms of *N. eurynome*.

Occurs abundantly throughout China, from Ningpo to Moupin.

### **Neptis aceris.** (Plate XIX. fig. 8, var.)

*Papilio aceris*, Lepechin, Reise, i. p. 203, pl. 17. figs. 5, 6 (1774); Esp. Schmett. i. 2, pl. 81, figs. 3, 4, pl. 82. fig. 1 (1783).

*Neptis aceris*, Pryer, Rhop. Nihon. p. 24, pl. vi. fig. 1 (1886).

*Neptis intermedia*, W. B. Pryer, Cistula Entom. ii. p. 231, pl. iv. fig. 1 (1877).

Var. **intermedia**, W. B. Pryer. (Plate XIX. fig. 8.) “Thorax iridescent green, upperside, ground-colour brown-black. Fore wing, in costal half a longitudinal white streak from base two thirds across the wing, interrupted towards the end by a band of the ground-colour; in outer half six large white spots form a sort of bow-shaped band across the wing, bending inwards towards the inner margin; a submarginal line of irregularly-shaped white spots: hind wing, a transverse straight white band from inner half of abdominal margin to outer half of costa; from just above anal angle a thinner white band or streak, interrupted by the ground-coloured nervures, crosses the wing nearly to the anterior angle. Underside dark chocolate, shading into lead-colour on inner margin of fore wing, markings much the same as on upperside, the submarginal rows of spots on fore wing being more distinctly marked, and there are generally some additional white marks on the margin itself; hind wing, in addition to the upperside markings, there is a thin submarginal white line, a somewhat indistinct white line between the two central bands, and from the base there are two

short white streaks, one a little way along the costa and the other below it. Expanse of wings  $2\frac{1}{3}$  to  $2\frac{1}{2}$  inches." (*W. B. Pryer, l. c.*)

This eastern form of *N. aceris* varies greatly in size and in the width of the white markings; none of the specimens, however, have quite so much white as typical *N. aceris*, and the ground-colour of the under surface is always darker.

Occurs commonly throughout China, Japan, and Corea during the warmer months of the year, also found in Amurland.

**Neptis soma.** (Plate XIX. fig. 7.)

*Neptis soma*, Moore, Proc. Zool. Soc. Lond. 1858, p. 9, pl. xlix. fig. 8; de Nicéville, Butt. Ind. ii. p. 102, pl. xxiii. fig. 108, ♂ (1886).

"Sexes alike. Allied to *N. nandina*, but differs on the underside in having the discoidal streak narrower, and the seven spots of the curved row are much smaller, being only half the size, and are wider apart; the submarginal row of spots is also smaller; the bands on the hind wing are also narrower. Underside deep maroon, the marks as on upperside, but those on hind wing less straight." (*Moore, l. c.*)

"All the markings in this species are very small and narrow, and more or less sullied, not clear pure white, the submarginal series of small white spots on the upperside of the fore wing complete. On the underside the markings are pure white, and of nearly equal width throughout. It appears to be a constant and well-marked species." (*de Nicéville, l. c.*)

My Chinese specimens of *N. soma* agree with Mr. Moore's type, but differ from Mr. de Nicéville's figure as follows:—The band of secondaries widens out towards costa, and the outer broad band is straight and terminates nearer to the anal angle. One specimen from Ta-chien-lu has the white bands of all the wings much broader, and seems to agree with *N. yerburi*, Butler, of which species I have an extensive series from the North-west Himalayas.

Occurs commonly at Wa-shan, Ta-chien-lu, Omei-shan, Pu-tsu-fong, and Chia-kou-ho, in Western China. It is found in June and July at various elevations up to about 9000 feet.

*Distribution.* Sikkin, Bhutan, Cachar, Sylhet, Naga Hills, Assam, Yunnan (*de Nicéville*), and Western China.

**Neptis susruta.** (Plate XIX. fig. 9.)

*Neptis susruta*, Moore, Proc. Zool. Soc. Lond. 1872, p. 563, pl. xxxii. fig. 4; de Nicéville, Butt. Ind. ii. p. 103 (1886).

"*Male.* Upperside brownish black: fore wing with ferruginous [? fuliginous] white narrow discoidal and attenuated contiguous streak; curved discal band of small and widely-separated



spots, an ill-defined black-bordered submarginal lunular line: hind wing with white inner band, and ferruginous [? fuliginous] white outer narrow lunular curved band. Underside deep ferruginous; markings prominent, and suffused with pale ferruginous; those of the hind wing similar to *N. soma*, but narrower. Expanse 2 inches." (*Moore, l. c.*)

Mr. Elwes, who has seen the specimens which I refer to *N. susruta*, considers them to be a form of *N. nandina*, Moore. The type of *N. nandina* was from Java, but is now lost, and Mr. Moore is not quite certain that the specimens in his collection under this name are really that species.

Chinese specimens of *N. susruta* are darker in colour of under surface, and the marginal bands of secondaries are straighter, but they do not otherwise differ from the representative of the species in Mr. Moore's collection.

Occurs at Chia-kou-ho, Pu-tsu-fong, Omei-shan, Moupin, and Wa-shan in Western China.

*Distribution.* Sikkim, Bhutan, Cachar, Sylhet, Assam, Khasi Hills, Chittagong, Upper Tenasserim (*de Nicéville*), Western China.

### **Neptis adipala.** (Plate XIX. fig. 10.)

*Neptis adipala*, Moore, Proc. Zool. Soc. Lond. 1872, p. 563, pl. xxxii. fig. 8; de Nicéville, Butt. Ind. ii. p. 102 (1886).

"*Male.* Upperside fuliginous black; markings white. Fore wing with a narrow discoidal and elongated and triangular contiguous streak; spots of curved discal band small; a submarginal row of black-bordered lunules. Hind wing with moderately broad inner band, and outer band of narrow quadrate spots. Underside deep bright ferruginous. Fore wing, markings as above. Hind wing with the bands and two basal streaks similar to those of *N. nandina*, except that the narrow outer line is in this nearer the margin. Expanse 2 inches." (*Moore, l. c.*)

The Chinese specimens, which I consider referable to *N. adipala*, do not agree with the type of this species in the direction of the band on secondaries, which also terminates in a different position; the white streak on under surface of the costa of secondaries is shorter, and there is no line or whitish band before the fringes.

Occurs at Chia-kou-ho, Wa-shan, Omei-shan, Pu-tsu-fong, and Moupin, in Western China.

*Distribution.* Sikkim, Khasi Hills, Naga Hills, and Upper Tenasserim (*de Nicéville*); Western China.

### **Neptis pryeri.**

*Neptis pryeri*, Butler, Trans. Ent. Soc. Lond. 1871, p. 403; Lep. Exot. pl. 63. fig. 4 (1874); Janson, Cist. Ent. ii. p. 155 (1877); Pryer, Rhop. Nihon. p. 24, pl. vi. fig. 3 (1886).

*Limenitis arboretorum*, Oberthür, Etud. d'Entom. ii. p. 24, pl. iii. fig. 3 (1876).

“Alæ supra nigræ, ciliis albis; anticæ vitta discoidali quinque maculari, serie macularum decem bisinuata discali et altera, a fascia media nigra intersecta, sex maculari, submarginali, apicem haud attingente, albis; posticæ fascia media a venis interrupta; stria sex maculari discali transversa, albis; corpus cinereum; alæ subtus albicantibus; anticæ maculis costali-discalibus, plagisque disco-cellulari, apicali et marginali, brunneis; posticæ basi nigro-maculata; plaga costali cellulum partim cingente, fascia media ad costam attingente, venis discalibus et area marginali (lunulos subseptem gerente) brunneis; corpus albidum.

“Exp. alar. unc. 2 lin. 5.” (*Butler, T. E. S.*)

The white markings vary in width. The discoidal streak, which is usually represented by a narrow basal portion and four spots beyond, is sometimes fairly broad, entire, and only indented along its outer edge. In some specimens the white markings on outer area of primaries are hardly indicated, and the band on secondaries very narrow.

One male example from Chang-yang has the central band of secondaries indicated by a pale spot on abdominal margin; the discoidal streak on primaries is suffused, and terminates in a whitish lunule; the costal spots of discal series are absent and the others are suffused: on the under surface of this specimen the central band of secondaries is linear and ill defined; the discoidal streak of primaries has an acute termination and two projections from its upper edge; the discal series of spots are suffused and seven in number. In wing expansion my specimens range from 62–70 millim.

This species is distributed throughout China, from Ningpo to Moupin, and is very common in many places in that country. At Gensan, in the Corea, where it occurs at the sea-level, it is very abundant. In Japan it seems to be a mountain insect; I took it near Lake Biwa, and Pryer records a specimen from the neighbourhood of Yokohama. Christoph found it at Vladivostock.

### **Neptis lucilla.**

*Papilio lucilla*, Hüb. er, Eur. Schmett. i. figs. 101, 102 (1794?).

*Papilio camilla*, Esper (*nec* Linn.), Schmett. i. 2, pl. 59. fig. 1 (1780).

*Neptis lucilla*, Lang, Butt. Eur. p. 161, pl. xxxviii. fig. 2 (1884); Pryer, Rhop. Nihon. p. 24, pl. vi. fig. 5 (1886).

*Limenitis ludmilla*, Herr.-Schäff. Schmett. Eur. i. fig. 546 (1851–1856).

*Neptis lucilla*, var. *ludmilla*, Lang, op. cit. p. 217.

“Expands from 1.75 to 2 inches. All the wings brownish black, much the same as in *L. sibylla*. Fringes black and white. Fore wings with a row of white spots arranged much as in *sibylla*, but they are rather larger and more banded; there is an indistinct basal streak,

sometimes absent, and outside this one or two white spots. Hind wings with one broad white band running straight across the centre and divided into seven spots by the nervures. Underside marked as above, but the ground-colour is reddish brown, and there are some indistinct whitish spots along the hind margin." (*Lang, l. c.*)

**Var. *ludmilla*.** "Rather smaller than the type. It appears to be intermediate between *N. lucilla* and *N. aceris*, the fore wings having a faint basal streak and hind marginal spots; the hind wings also show traces of a second light band. On the underside these extra markings are quite distinct, and the ground-colour is lighter brown than in the type." (*Lang, l. c.*)

*Larva.* "According to Freyer reddish brown, yellowish laterally; four of the segments have two thick spines. It feeds on *Spiraea salicifolia* in June." (*Lang, l. c.*)

This species is represented at Ta-chien-lu and Wa-ssu-kow, in Western China, by a modification of the *ludmilla* form. In Japan some of the specimens from Yesso have a larger, and others from Oiwake a lesser, amount of white than in typical *N. lucilla*. Alphéraky\* records the *ludmilla* form from Mongolia, and Fixsen† says that both forms occur in the Corea. Oberthür records one specimen from the Isle of Askold. *N. lucilla* also occurs in Amurland (type and var. *ludmilla*) and Eastern, Central, and Southern Europe.

### Genus ATELLA.

*Atella*, Doubleday, Gen. Diurn. Lep. i. p. 165 (1848); de Nicéville, Butt. Ind. ii. p. 28 (1886).

"HEAD broad, hairy, the hairs on the crown long.

"*Eyes* prominent, nearly round.

"*Palpi* divergent, ascending, rising considerably above the forehead. Basal joint very short, curved; second long, broad anteriorly, very much swollen, scaly and hairy, the outer side of the anterior surface with a fringe of very long hairs, the back with a short tuft towards apex; third joint not one seventh the length of the second, acicular, scaly.

"*Antennae*, fully three fourths the length of the body, terminating in a short but rather gradually thickening club rounded at the apex, with its articulations more distinct than the rest.

"THORAX short, rather stout, ovate, hairy; *abdomen* short, rather stout.

"*Fore wing* subtriangular, the apex slightly rounded; costal margin considerably arched, one half longer than the outer margin, which is equal, or nearly so, in length to the inner, and, like the last, slightly emarginate. Costal nervure stout, extending but little beyond the end of the cell. Subcostal nervure slender, lying close to the costal, until the latter curves upwards to the costa; first subcostal nervule arising shortly before the end of the

\* Rom. sur Léop. v. p. 110 (1889).

† Ibid. iii. p. 294 (1887).

cell; the second at rather a long distance beyond it; the third at about one third the distance between the second and fourth; the fourth about midway between the second and the apex, terminating on the costa just above the apex. Discoidal cell short, but little more than one third the length of the wing. Upper discocellular nervule extremely short; middle discocellular curved, rather more than half the length of the lower discocellular, which is slightly curved, and anastomoses with the third median nervule at its origin, or shortly beyond it. Third median nervule moderately curved.

“*Hind wing* obovate; the margins all nearly equal in length; the outer margin sinuate, sometimes prolonged into a short tail at the termination of the third median nervule. Præcostal nervule simple, short, curved outwards. Costal nervule considerably curved at its origin. Upper discocellular nervule slender, directed almost immediately outwards; lower discocellular short, slightly curved, very slender, almost atrophied, uniting with the median nervule opposite to the origin of the second median nervule, or with the base of the third median nervule, which is but little curved.

“*Fore legs* of the male clothed with long delicate hairs. Tibia shorter than the femur, cylindric. Tarsus shorter than the tibia, nearly cylindric, tapering to a point at the apex. Of the female scaly and hairy. Tibia shorter than the femur, spiny within towards the apex. Tarsus shorter than the tibia; the first joint longer than the rest combined, curved, spiny within and armed, as are the three following joints, at the apex, with a stout spine covered by a tuft of hair at the base of the following joint; fourth and fifth joints transverse.

“*Middle and hind legs*, with the tibiæ shorter than the femora, spiny externally and laterally, the lateral spines longest; spurs long and stout. Tarsi about one fourth longer than the femora, rather densely spiny all around; the spines of the upper surface slenderest, the lateral ones the longest, those of the lower surface arranged in two regular series: first joint exactly equal to the rest combined; second, third, and fourth progressively shorter; fifth of equal length with the third. Claws rather short, curved, compressed. Paronychia bilacinate: the outer lacinia as long as, and broader than, the claw, which it quite covers; inner nearly strap-shaped, slightly tapering, very little shorter than the outer one. Pulvillus two-jointed, as long as the claw; the second joint broad.

“*LARVA* cylindrical, spiny; the spines on all the segments about equal in length.

“*Pupa* elongate ovate, constricted, spiny.” (*Doubleday, l. c.*)

### **Atella phalanta.**

*Papilio phalanta*, Drury, Ill. Exot. Ent. i. pl. xxi. figs. 1, 2 (1770).

*Argynnis phalanta*, Godart, Enc. Méth. ix. p. 259 (1819).

*Atella phalanta*, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 151, pl. v. fig. 7 (larva), 7 a (pupa) (1857); Moore, Lep. Ceyl. i. p. 62, pl. xxxi. figs. 1 (imago), 1 a (larva and pupa) (1881); Distant, Rhop. Malay. p. 173, pl. ix. fig. 4, ♂ (1882); de Nicéville, Butt. Ind. ii. p. 30 (1886); Pryer, Rhop. Nihon. p. 27, pl. vii. fig. 10 (1889).

*Papilio columbina*, Cramer, Pap. Exot. iii. pl. ccxxxviii. figs. A, B (1779), iv. pl. ccxxxvii. figs. D, E (1781).

- “*Male and female.* Wings above bright ochraceous, with the following blackish markings :—anterior wings with the apical half of the costal margin, four narrow waved fasciæ (arranged in pairs) crossing cell, a waved and broken spot beyond cell extending from costa to the lower discoidal nervule, an oblique series of four spots divided by the median nervules ; a straight discal series of six spots placed between the nervules, followed by a similar series of four spots, the upper of which is placed between the discoidal nervules and the fourth between the second and third median nervules ; a submarginal and much-waved fascia terminating at the third median nervule, where it is followed by an irregular spot, and which is more or less connected along the nervules with a marginal series of spots preceded by a narrow line : posterior wings with some transversely waved fasciæ on basal area ; a discal series of four rounded spots, the two upper divided by the lower subcostal nervule, and the third and fourth by the second median nervule ; two waved submarginal fasciæ, the innermost particularly waved and sinuated, and a marginal series of elongate spots. Wings beneath as above, but with most of the dark markings paler ; anterior wings with the black spots near outer angle very large and prominent ; the straight series of spots beyond cell are outwardly margined with greyish, and beyond this the wing has a violaceous suffusion ; posterior wings with the outer central linear dark fascia reddish and outwardly margined with greyish, beyond which the colour has a violaceous tinge, and the black spots are very minute and surrounded with reddish. Body above somewhat concolorous with wings, beneath greyish ; legs ochraceous, the femora greyish. Exp., ♂ ♀, 55–58 millim.” (*Distant, l. c.*)
- “*Larva.* Purple-brown ; head armed with two delicate branched spines, each segment with two dorsal rows of similar spines and two lateral rows of shorter spines. Feeds on *Flacourtia*, *Salix*, &c.” (*Moore, l. c.*)
- “The *pupa*, which I found on one occasion in Calcutta attached to the underside of a leaf of a tree resembling the weeping willow, was a beautiful green, with a subdorsal series of five acutely pointed tubercles, marked with red, between each pair another pair of very small blunt ones, the upper edge of the wing-covers and a spot on each side of the head also marked with red.” (*de Nicéville, l. c.*)

Pryer records and figures a specimen taken by the Rev. W. Andrews, October 1880, at Sonogi, about 30 miles from Nagasaki.

According to de Nicéville this is a common butterfly in India, occurring throughout the year in the plains, and in suitable seasons in the Himalayas up to 8000 feet. I met with specimens in Kashmir in October. The species also occurs in Ceylon, the Malay Peninsula, Siam, Sumatra, Java, and China (*de Nicéville*). With regard to the latter country, I should say that the species was not met with by my collectors in any locality which they visited.

## Genus MELITÆA.

*Melitæa*, Fabricius, Illiger's Magazin, vi. p. 284 (1807); Doubleday, Gen. Diurn. Lep. i. p. 177 (1848); de Nicéville, Butt. Ind. ii. p. 23 (1886).

“HEAD rather small, clothed with hair; forehead narrow.

“*Eyes* oval, not prominent.

“*Palpi* divergent, porrect, slightly ascending, projecting considerably beyond the forehead; all the joints hairy. First joint stout, curved; second joint subcylindric, rather compressed, somewhat stoutest in the middle, twice the length of the first; third joint slender, almost acicular, about the same length as the first.

“*Antennæ* short, scarcely half the length of the costal margin of the wing, rather slender, terminating in a short, pyriform, large club.

“THORAX moderately stout, elongate oval, clothed with long hairs.

“*Fore wing* nearly triangular; the costal margin scarcely, or not at all, rounded; outer margin two thirds the length of the costal, rounded, often but slightly; inner margin nearly straight, longer than the outer. Costal nervure rather stout, scarcely extending beyond the middle of the costal margin. Subcostal nervure slender; its first nervule thrown off before the end of the cell; its second beyond the cell, opposite, or nearly so, to the termination of the costal nervure; the third nearer to the second than to the fourth; fourth nearer to the third than to the apex. Upper discocellular nervule very short; middle discocellular curved inwards, about half the length of the lower, which is but little curved, and anastomoses with the third median nervule not far from its origin. Internal nervure wanting.

“*Hind wing* obovate; the shoulder very prominent; the costal margin nearly straight, equal in length to the inner; outer much rounded, but little more than half the length of the other margins. Præcostal nervure simple. Discoidal nervule appearing to be a third subcostal nervule, arising from the second subcostal nervule soon after its origin. Cell open. Third median nervule but little curved. Inner margin entirely embracing the abdomen.

“*Fore legs* of the male hairy and scaly; the femur and tibia of about equal length, unarmed. Tarsus smooth, subcylindric, slightly tapering at the base and apex; one-jointed, but sometimes showing slight indications of articulations; shorter than the tibia. Of the female with the tibiæ shorter than the femora, unarmed, rather stouter towards the apex. Tarsus five-jointed; the first joint cylindric, elongate, equal or more than equal to the rest combined, mostly armed at the apex, as are the three following joints always, with a spine on each side; second joint much shorter; rest transverse; fifth sometimes very small.

“*Middle and hind legs* with the femora about equal in length to the tibiæ, rather robust. Tibiæ and tarsi densely clothed with scales, the former rather longer than the latter, smooth externally, spiny laterally and internally; the lateral spines long, the internal ones very short. Tarsi with all the joints nearly cylindric, slightly tapering to the claw, spiny laterally and below, not above; the spines on the lower surface of all the joints arranged in a double series; lateral spines long. First joint not equal to the rest combined; second joint nearly half the length of the first; third and fourth progressively shorter; fifth equal

to the third. Claws curved, grooved below. Paronychia bilacinate, the outer lacinia slender, nearly strap-shaped, longer than the claw; inner lacinia about half the length of the outer, subtriangular, pointed. Pulvillus two-jointed, nearly as long as the claw.

“ABDOMEN moderately stout, arched, not much shorter than the inner margin of the hind wing.

“LARVA subcylindric, rather tapering to the extremities, tuberculate; the tubercles covered with short setæ: or spiny, the spines set round with hairs. *Pupa* short, obovate, not angular, tuberculate, with the head rounded; or angular, with the head bifid.

“This genus is difficult to characterize in the perfect state, so as readily to distinguish it from *Argynnis*; but there is one important distinctive character, namely, that the tarsi of the middle and hind legs are not spiny on the under surface, whilst they are so invariably in *Argynnis*.” (*Doubleday, l. c.*)

### **Melitæa didyma.**

*Papilio didyma*, Esper, Schmett. i. 2, pl. 61. fig. 1 (1780).

*Melitæa didyma*, Bremer & Grey, Schmett. N. China's, p. 7 (1853); Lang, Butt. Eur. p. 188, pl. xlv. fig. 6 (1884).

“Expands from 1.35 to 1.60 inch. All the wings deep reddish fulvous. Hind margins black. The male has on the fore wings a row of crescentic black spots running parallel to the hind margin, a somewhat irregular central row; there is a black discoidal mark, almost ring-shaped, and some basal spots. Hind wings with a hind marginal row of black spots, and some black basal patches and spots. The female is slightly duller in colour, and the fore wings have a faint row of spots between the hind marginal and central rows, and traces of a similar row on the hind wings. Underside almost exactly as in *Trivia*, but not so brilliant in colour or so strongly marked; the apical light patch of the fore wings does not extend along the hind margin as in that species.” (*Lang, l. c.*)

*Larva*. “Bluish grey, with white dots and black bands; lateral stripes yellow; spines white and fulvous. Feeds on plantain, &c., from April to June.” (*Lang, l. c.*)

Bremer and Grey record this species from the neighbourhood of Pekin, and remark that it is common and very variable. Grum-Grshimailo\* met with various forms of *M. didyma* in Eastern Thibet, one of which, var. *latonia*, is described, Horæ Ross. 1891, p. 455.

Staudinger (Rom. sur Léop. vi. p. 183) states that *M. didyma* and several named forms occur throughout Amurland, and that Dr. Wulffius met with the species at Possiet Bay, Corea, and at Port Mai. De l'Orza records it from Japan; but this is probably an error.

\* *Melitæa romanovi*, Gr.-Gr., and *M. saxatilis*, var. *infernalis*, Gr.-Gr., are also recorded by Grum-Grshimailo from Eastern Thibet.

This is one of the most variable species of the genus *Melitæa*, and a large number of the forms have been named and described. It occurs throughout the greater part of the Palæarctic Region.

### ***Melitæa aurinia*.**

*Papilio aurinia*, Rottemburg, Naturf. vi. p. 5 (1775).

*Papilio artemis*, Wien. Verz. p. 322 (1776); Hübner, Eur. Schmett. i. figs. 4-6 (1793), fig. 653 (1824).

*Argynnis artemis*, Godart, Enc. Méth. ix. p. 285 (1819).

*Melitæa artemis*, Herrich-Schäffer, Schmett. Eur. i. figs. 364, 365 (1850).

*Melitæa aurinia*, Lang, Butt. Eur. p. 183, pl. xliii. fig. 2 (1884).

*Melitæa aurinia*, var. *sibirica*, Staudinger, Cat. 1861, p. 7, 1871, p. 17 = var. *desfontainesii*, Eversmann, Lep. Ross. p. 92.

“Expands from 1·30 to 2·16 inches. Wings reddish fulvous, with lightish yellow spots surrounded by black. The hind margins of all the wings with a row of brownish lunules, external to which is a very narrow black border. Underside glossy, much duller and less distinct than in *Maturna*, the yellow spots on the fore wings being scarcely visible. The hind wings have a central light band and light basal spots; along the hind margin is a row of light lunules, and between these and the central band a row of light spots enclosing black dots.

“*Larva*. Black, with a lateral row of white dots; the head as well as the spines black; legs reddish. *Pupa*. Light yellow, spotted with black; the wing-cases white.” (*Lang, l. c.*)

Further details of the early stages of this species will be found in Buckler’s ‘*Larvæ of the British Butterflies*.’

Food-plants *Scabiosa* and honeysuckle (*Lonicera*).

Var. *sibirica*, Staudinger, = *desfontainesii*, Eversmann (nec *desfontainii*, Godart), is said to differ from the type in being paler in colour and having broader fulvous bands on the secondaries. Eversmann states that specimens of *aurinia* (*artemis*) from Eastern Siberia (his *desfontainesii*) are usually very pale, and have very little black, and much more yellow in the markings, the fulvous band of secondaries occupying more than half of the wing.

I found this species rather common at Gensan, Corea, in June. The specimens are rather larger, paler, and more uniform in colour than those from Europe, and the apex of primaries is more produced. Three examples appear to be referable to var. *sibirica*, Staud.

Dr. Fixsen records *M. aurinia* (*artemis*) from the Corea, and states that the specimens are intermediate between the European type and the Siberian form. This last he refers to as *pallidissima*, Elwes; evidently an error on his part, as the term “*pallidissima*” was used by Staudinger in his catalogue to indicate the differential character of his var. *sibirica*, and is not the name



of a form of *M. aurinia* described by Mr. Elwes. Alphéraky (Rom. sur Lép. v. p. 114) records var. *sibirica* from Yan-noyn-gouan in Mongolia and the neighbourhood of Peking.

In his remarks on Amurland specimens of *M. aurinia*\*, Mr. Elwes, in referring to the var. *sibirica*, says that it "somewhat resembles the variety *defontainesii* of Godart," and adds: "Judging from the specimens I have seen, it can hardly be called '*pallidissima*.'" The rich deep fulvous form (*desfontainii*, Godart, = *desfontainesii*, Herrich-Schäffer) from Spain and Portugal should not be confounded with the very pale Siberian form (*sibirica*, Staudinger, = *desfontainesii*, Eversmann).

Widely distributed in Central and Northern Europe (except the Polar regions). Its range extends into Armenia, Amurland, Corea, and North Africa.

### **Melitæa parthenie.**

*Papilio parthenie*, Borkhausen, Eur. Schmett. i. p. 55 (1788).

*Melitæa parthenie*, var. *orientalis*, Ménétréés, Schrenck's Reise, p. 23, pl. ii. fig. 5 (1859).

Var. **orientalis**, Ménétréés. On the upper surface this form is very similar to Meyer-Dür's figure of *M. parthenie* (Verz. d. Schmett. d. Schw. pl. i. fig. 3), but the spots on the under surface of secondaries are white instead of yellow; the markings on primaries are more pronounced and the macular submarginal band of secondaries is narrower, the spots forming it being less round on their inner edge.

The type of this form is from Bouri, Amurland, where it was captured by Schrenck in July. Two specimens, exactly identical, had been previously found in Kamtschatka.

Dr. Staudinger considers *orientalis* to be a pale and aberrant form of *M. athalia*. Fixsen records specimens from Corea which he says agree on the upper surface with European *M. parthenie*, except that they are more strongly marked, and that on the underside the secondaries have a broad yellow central band. The same author records this form from Upper Amurland, and suggests for it the varietal name of *latefascia*†. Staudinger‡ refers at some length to this form in his remarks on *M. aurelia*.

\* Proc. Zool. Soc. 1881, p. 898.

† Rom. sur Lép. iii. p. 302.

‡ Rom. sur Lép. vi. p. 186.

My specimens from Corea agree exactly with Ménétrés's figure of *orientalis*. They have the central band on under surface of secondaries white instead of yellow, as in Fixsen's *latefascia*.

The typical form of *M. parthenie* is found in South-west Germany, Switzerland, France, and Piedmont, Central Spain and Andalusia; most frequently met with in mountainous districts at moderate elevations. An alpine form, var. *varia*, Meyer-Dür, occurs at elevations ranging from 2000 to 2500 metres.

According to Lang the larva of *M. parthenie*, which feeds on *Plantago*, is black dotted with white, lateral spots yellow.

**Melitæa phœbe.** (Plate XXIV. figs. 10, 11, 12, vars.)

*Papilio phœbe*, Knock, Beitr. Ins. iii. p. 124, pl. vi. figs. 3, 4 (1783).

*Melitæa scotosia*, Butler, Cistula Entom. ii. p. 282 (1878).

*Melitæa phœbe*, Pryer, Rhop. Nihon. p. 27, pl. viii. fig. 5 (1888).

Var. **scotosia**, Butler. "*Female*. Allied to *M. atheria* of Europe, but dull tawny, with all the veins black, the black spots of double the width, and the disc of the primaries (as well as the submarginal lunules) pale: below altogether duller in colour than *M. atheria*, the veins upon the apical area of primaries strongly defined; the black spots of primaries of double the width, and the black lines of secondaries distinctly wider. Expanse of wings 2 inches 4 lines.—Tokio." (*Butler, l. c.*)

This very distinct form of *M. phœbe* is the only one occurring in the region dealt with. It is found in the mountain district of Central Japan and in Yesso; common at Fusan and Gensan in Corea, also recorded from North China and Amurland.

Some of the female specimens are very dark-coloured, almost black (Plate XXIV. fig. 12), and in this respect approach var. *caucasica*, Staudinger. Certain examples of the male agree very well with the specimen figured by Ménétrés as var. *melanina* (Schrenck's Reise, pl. ii. fig. 3); this should not be confounded with *melanina*, Herr.-Schäff., which, as pointed out by Dr. Staudinger, equals *atheria*, Eversmann, a variety of *M. phœbe* from South Russia, resembling the large Amurland form *scotosia*, Butler; it is, however, smaller, not so bright reddish brown in colour, and more marked with black.

**Melitæa athalia.** (Plate XXIV. fig. 7, ♀ var.)

*Papilio athalia*, Rottemburg, Naturf. vi. p. 5 (1775); Esper, Schmett. i. pt. i. pl. 47. figs. 1 *a, b* (1779?).

*Melitæa athalia*, Lang, Butt. Eur. p. 191, pl. xlv. fig. 3 (1884); Pryer, Rhop. Nihon. p. 27, pl. vii. fig. 6 (1887).

*Melitæa niphona*, Butler, Cist. Ent. ii. p. 281 (1878).

“Expands from 1·50 to 1·75 inch. All the wings deep brownish fulvous, with black markings arranged as in the last species, but much broader, the whole insect having a darker appearance. Underside: Fore wings pale fulvous, a row of black spots running across the wing near its centre, several black lines and spots internal to this; near the apex and along the greater part of the costa is a patch of straw-coloured spots. Hind wings with the light bands very broad, the central one often nearly white, without spots.

“*Larva*. Black, dotted with white; head and prolegs black; spines rust-coloured (*Dup.*). Feeds on *Plantago*, &c., in May and September.” (*Lang, l. c.*)

A more detailed description of this larva will be found in Buckler's ‘Larvæ of the British Butterflies,’ where *Melampyrum pratense* is given as the food-plant.

Var. **niphona**, Butler. “*Female*. Allied to *M. athalia* of Europe, but considerably larger; the discal line placed farther from the submarginal one, and almost divided into spots in the primaries; wings below altogether paler than in *M. athalia*, the secondaries being creamy white, with the markings sharply defined and similar to those of *M. athalia*. Expanse of wings 1 inch 11 lines.—Tokio.” (*Butler, l. c.*)

The figure (Plate XXIV. fig. 7) is drawn from the type of *niphona*, Butl., in the National Collection at South Kensington.

This form, which occurs commonly at Gensan in the Corea, also at Oiwake, Assama Yama, and the Island of Kiushiu, agrees very well with specimens in my collection from Amurland and the Ussuri. Dr. Fixsen also records this form from the Corea, and suggests that it might bear the varietal name of *mandschuricha*; he also records a melanic form of *M. athalia*. Pryer gives a figure of a curious aberration on plate vii. fig. 7. I have similar examples of *M. athalia* from various European localities.

*M. athalia* is widely distributed throughout Europe, and is also found in Armenia and Siberia. It may be observed that a really good monograph of the genus *Melitæa*, especially of the *athalia* group, is much needed. All the species appear to be exceedingly variable; some of them occur near the sea-level, others are only to be found at a considerable elevation. As no drawing, however good it may be, is sufficiently faithful for the purpose of identification, careful study of the actual types would be absolutely necessary. At the present time there is much diversity of opinion as to the relationship of such species as *athalia*, *parthenie*, and *dictynna*; and if a large number of each of these from many different localities were mixed together,

I think it would be found that no two entomologists would separate them alike into series of species.

**Melitæa protomedia.** (Plate XXIV. fig. 8, ♂.)

*Melitæa protomedia*, Ménétriés, Bull. de l'Académ. xvii. p. 214 (1859); Schrenck's Reise, ii. p. 23, pl. ii. figs. 6 ♂, 7 ♀ (1859); Fixsen, Rom. sur Lép. iii. p. 298, pl. xiv. fig. 2 (1887).

“Supra alis fulvis, fusco-reticulatis, posticis serie punctorum nigrorum obsoletorum in maculis ocellaribus; subtus, fasciis duabus ferrugineis; anteriore *dictynnam* angustiori, posteriore nigro-punctata.” (*Ménétriés, l. c.*)

“Envergure : 1 pouc. 5 lign.—Les ailes supérieures sont un peu échancrées en dedans, à leur bord externe, avant l'angle interne. En dessus, le dessin rappelle celui de la *M. parthenie*, Herr.-Schäff., Meyer-Dür, mais la couleur du fond des ailes est d'un fauve un peu plus jaunâtre, à peu-près comme celle de la *parthenie* femelle; les lignes noires sont un peu moins étroites, et disposées de même, si ce n'est que chez le mâle, les ailes supérieures offrent la plus interne de ces lignes interrompue dans son milieu, et que la bordure externe est formée, chez ce sexe seulement, de deux lignes parallèles brunes, très minces, et séparées l'une de l'autre par une ligne également étroite et fauve; chez la femelle, au contraire, cette bordure s'empâte tellement qu'on ne distingue plus qu'une assez large bande d'un brun foncé. Les ailes inférieures se distinguent de celles de la *parthenie* par ce que, chez le mâle on remarque dans le premier intervalle, formé par les lignes transversales brunes, une rangée de traits noirs, tandis que chez la femelle les lignes noires sont plus larges, et cela aux dépens des intervalles fauves qui ne forment plus que de petites taches de cette dernière teinte.

“En dessous, cette espèce se rapproche par son dessin de la *M. dictynna*; les ailes supérieures se distinguent cependant, par la tache oblique (la plus extérieure du bord antérieur), plus marquée, plus foncée, même chez le mâle, ainsi qu'une autre tache non loin de l'angle interne; chez la femelle, ces taches sont plus grandes et de teinte plus foncée, et de plus, vers le sommet et intérieurement aux lignes externes, on voit une courte bande brune. Les ailes inférieures présentent deux bandes transversales et ferrugineuses, dont l'antérieure ou celle la plus proche de la base est plus étroite que celle de la *M. dictynna*, la bande postérieure renferme cinq points noirs bien marqués, plus arrondis chez les femelles et un peu en trait chez les mâles.

“Les quatre ailes sont frangées de blanc. En général, la femelle paraît plus foncée en couleur; en dessus les lignes brunes plus larges; en dessous le dessin est aussi plus marqué et les lignes plus larges.

“Le corps est brun, recouvert d'une pubescence fauve; une ligne jaunâtre se dessine de chaque côté, et le dessous du corps est aussi de cette dernière teinte; l'extrémité de l'abdomen est couverte de poils longs, serrés et roussâtres. Les antennes sont noires, annelées de blanc; la massue est noire en dessus, fauve en dessous, avec l'extrémité d'un fauve vif.” (*Ménétriés, Schrenck's Reise.*)

Fixsen gives an elaborate description (four pages) of the Korean *M. protomedia*, and compares it with Amurland examples. I have not seen specimens from that district, and the figures in Ménétriés's 'Schrenck's Reisen' are not

always to be relied on; but comparing my Korean specimens with the figure of *M. protomedia*, I find that they are larger and appear more brightly coloured. I have one example from Fusan which is referable to the form described by Fixsen as *argentata* \*.

I only met with this species at Fusan, S.E. Corea, where I took it in June. My collectors found it common at Chang-yang, Central China. It also occurs in Eastern Siberia and the neighbourhood of Pekin.

In my paper on the "Lepidoptera of Japan and Corea" (Proc. Zool. Soc. Lond. 1887, p. 422) I followed Staudinger and Elwes in referring *protomedia* to *M. dictynna*, of which it is probably a local race; but as it does not agree in every respect with any specimen of *M. dictynna* that I have seen, I have retained it here as a distinct species.

**Melitæa jezabel.** (Plate XXIV. fig. 9, ♀ var.)

*Melitæa jezabel*, Oberthür, Etud. d'Entom. xi. p. 17, pl. ii. fig. 14 (1886).

*Male.* Deep fulvous; all the wings broadly bordered with black, especially the secondaries. Primaries have three black-outlined stigmata, one at the outer extremity of discoidal cell, one in the cell, and one below it in the submedian interspace; the central series of black spots not always complete, but these are often well defined and sometimes fairly large; submarginal series of black spots confluent towards costa; there is a series of small spots of the ground-colour along the inner portion of the marginal border. Secondaries have the basal area black; central line black, the costal half often broken up into spots. Fringes whitish, chequered with black at the ends of the nervules. Under surface of primaries pale fulvous; the stigmata of upper surface faintly reproduced; central series of spots represented by three near costa; the submarginal series often conspicuous, but sometimes ill-defined or entirely absent; a submarginal series of yellow crescents, most clearly defined towards costa, where they are inwardly edged with black. Secondaries darker than primaries, with the following yellow markings:—an oblique interrupted basal band; a discoidal spot edged with black; a central, slightly angulated, macular band transversely intersected by a blackish line; and a submarginal series of crescents edged on both sides with black; the nervules are edged with yellowish on the submarginal area, and this portion of the wing is traversed by a wavy black line, most distinctly seen towards inner margin.

*Female.* This sex is dimorphic. In the commoner form the ground-colour is rather paler than that of the male, and the central and submarginal series of black spots are well developed. On the secondaries the inner half of the wing is deeply suffused with black; there is a pale discoidal spot edged with black; a central series of black spots and indications of two transverse black lines; the submarginal line is either yellowish or greyish. Sometimes the outer margin is broadly black, and is traversed by a series of reddish spots and the yellowish or greyish submarginal line. Fringes whitish, chequered with black.

The other form (Plate XXIV. fig. 9) is fuliginous, suffused with grey on the costa of primaries

\* Rom. sur Lép. iii. p. 301, pl. xiv. fig. 3 (1887).

and sometimes on the central area of the wing. The markings of primaries are as follows:—stigmata filled in with yellowish, sometimes tinged with reddish; a central yellowish or fulvous macular band, preceded by a large spot of the same colour near the costa, and sometimes a few smaller ones below it; a submarginal macular band deep fulvous; a marginal series of yellowish or greyish spots. Secondaries have macular bands similar to those on the primaries, but these do not always reach the abdominal margin; a marginal series of greyish crescents.

On the under surface both forms are alike, and are similar to the male; but the ground-colour and markings are rather paler.

Expanse, ♂ 38–42 millim., ♀ 36–44 millim.

*M. jezabel* is exceedingly close to *M. balbita*, Moore, and probably is only a local race of that species. It occurs in the mountains around Ta-chien-lu in Western China, and How-kow in Thibet, at an elevation of about 10,000 feet, in July and August, but seems to be most abundant at the last-named place.

### **Melitæa agar.** (Plate XXIV. fig. 6, ♀.)

*Melitæa agar*, Oberthür, Etud. d'Entom. xi. p. 18, pl. v. figs. 32 ♂, 31 ♀ (1886).

*Male.* Deep fulvous. The discoidal stigmata of primaries are broadly black, and the inner one is united with an annular black mark below it in the submedian interspace; the black spots of central series are bar-like and confluent towards costa, and terminate in a large oblong spot in the submedian interspace; on the submarginal area there is a series of longitudinal black bars transversely intersected by a line, varying in width, of the ground-colour; outer and inner margins bordered with black. Secondaries black, with the venation marked with deep fulvous as far as the broad central band, which is of the same colour; this band is traversed by two rows of black spots, those composing the outer series smaller than those of the inner series; these last are often dilated, and are sometimes merged in the ground-colour; there is a deep fulvous transverse curved streak in the discoidal cell, and the outer margin of the wing is broadly bordered with black; the basal area is clothed with long silky fulvous hairs. Fringes white, spotted with black. Under surface of primaries pale fulvous, the stigmata faintly outlined; beyond the end of the cell are three transverse rows of black dots, but the outer series is never well defined and the lower ones of the inner series are often obsolete; the apex is pale straw-coloured, and there is a series of black dots on the outer margin. Secondaries pale straw-colour, with some black spots at the base, an interrupted series on central area, and two complete rows on outer margin; those of the first series between the nervules, and those of the second series on the extremities of the nervules; there are two broad, black-edged, pale fulvous bands; the first has a downward projection from its inner edge near costa, and its lower extremity separated from a streak of the same colour in the abdominal fold; the second is traversed towards its outer edge by a row of black dots.

*Female.* Primaries greyish white, sometimes tinged with pale fulvous; the stigmata are broadly outlined in black and filled in with dark grey, the outer sometimes with fulvous; transverse black markings as in the male: secondaries black, with a greyish or pale fulvous chain-like band. Under surface as in the male, but the ground-colour is rather whiter.

In some examples of the female all the wings are black, with a submarginal series of obscure fulvous spots on the primaries, preceded by a short series from the costa and some indications of a submarginal series on the secondaries.

A few male specimens have the chain-like band of the female, represented in deep fulvous, on the secondaries.

Var. *a*. The central band on upper surface of primaries is indicated by three or four spots below the costa; the secondaries have the ground-colour as on primaries, but most of the central transverse markings are absent. On the under surface the primaries have only one transverse row of black spots; the black basal spots of secondaries form conspicuous longitudinal bars, and there is a series of seven large quadrate or oblong black spots before the second fulvous band.

Occurs at elevations ranging from 5000 to 11,000 feet in July and August at Ni-tou, Che-tou, Pu-tsu-fong, Wa-ssu-kow, Ta-chien-lu, in Western China, and at How-kow in Thibet.

**Melitæa bellona**, sp. nov. (Plate XXIV. figs. 3 ♂, 1 ♀, 2, 4, 5 vars.)

*Male*. Fulvous, with black markings. Primaries blackish at the base; the first discoidal stigma together with the one below it form a broad fuscous-centred band from subcostal to submedian nervure; the second stigma is filled up with black; central macular band originates in a longitudinal black dash on costa; submarginal macular band narrow; outer marginal border black, with some small spots of the ground-colour on its inner edge; nervules broadly black before outer border. Secondaries blackish on the basal third and along inner marginal area, the former traversed by some transverse lines and other more obscure markings of the ground-colour; a central line of small spots and a submarginal band, the latter lunulated from inner margin to third median nervule, and broken up into spots from that point to costa; outer margin broadly bordered with black, enclosing a series of obscure fulvous spots. Fringes whitish, chequered with brownish at the tips of the nervules. Under surface of primaries fulvous; stigmata outlined in black; central bands, composed of small black spots, do not attain the costa; marginal line formed of a series of >-shaped marks, edged externally, and internally towards costa, with yellowish, is preceded by a yellowish cloud from costa: secondaries fulvous, with three broad yellowish straw-coloured black-edged bands and a discoidal spot of the same colour; the middle band is traversed by a black line, and the outer is dentated.

*Female*. Similar to the male but paler; the black bands are broader and less interrupted; the basal half of secondaries is black, covered with long golden-brown hairs, and limited by a macular yellowish band, which does not reach the abdominal margin; submarginal band formed of deep fulvous spots; marginal line greyish and wavy.

Expanse 50-52 millim.

Ab. *a*. The discal markings on upper surface are more or less obsolete, and on the under surface the black markings of primaries are, with the exception of three spots of the central band, entirely eliminated; on the secondaries there is a large black patch on costa between the subbasal and central yellow bands, a black spot beyond the yellow discoidal one, and a black curved dash in the submedian interspace; the outer margin has a broad yellow border, its inner edge sharply defined by a black dentated line. (Plate XXIV. fig. 5, ♂.)

- Ab. *b.* All the wings are blackish on the upper surface; the primaries have a submarginal fulvous macular band; the secondaries have narrow central and broad submarginal macular bands; on the under surface the markings are typical, except as regards the outer edging of the submarginal band, which is more conspicuously black. (Plate XXIV. fig. 2, ♂.)
- Ab. *c.* Black spots on under surface of primaries mostly faint; the outer margin is bordered with whitish, with marginal black line as in the type. The secondaries have the transverse bands whitish, and the space between the subbasal and central is clouded. (Plate XXIV. fig. 4, ♀.)

A very variable species. I have figured some of the most striking aberrations, but do not consider it advisable to name them.

Common in Western China at Pu-tsu-fong, but scarcer at Wa-shan, Ta-chien-lu, and Chow-pin-sa. Occurs in June and July up to an elevation of about 10,000 feet.

### *Melitæa yuenty.*

*Melitæa yuenty*, Oberthür, Etud. d'Entom. xi. p. 17, pl. ii. fig. 13 (1886).

*Male.* Pale fulvous, with black markings. The basal area of primaries is suffused with blackish, traversed by a wavy black line and limited by an oblique one; there is a large black spot at end of discoidal cell, sometimes annular in form; the central series of black spots is undulated, and the submarginal and marginal series run parallel with the outer margin; the costa, outer margin, and three fourths of the inner margin are narrowly black. Secondaries are more or less deeply suffused with black over the basal half; there are two rows of black spots parallel with the broad, black-bordered outer margin. Fringes grey. Under surface of primaries fulvous, spotted with black as above, but the margins are not black, and there is no blackish suffusion on the basal area; on the outer marginal area there is a series of arrow-shaped marks, with the heads, directed inwards, black, and the shafts yellowish white. Secondaries tawny; the basal area yellowish white, limited by an interrupted black line and spotted with black; the central band is broad, yellowish white, edged on each side by an interrupted black line, and intersected by a series of black spots; beyond this is a row of black spots, and the space between this row and the central band is suffused with yellowish white; there is a series of large yellowish-white arrow-heads, outlined in black, on the outer marginal area, and the marginal line is of the same colour.

*Female.* Similar to the male but larger.

Expanse, ♂ 40–50 millim., ♀ 46–52 millim.

In some specimens the black borders of all the wings are very broad and uniform; a few of these have the basal portion of the secondaries up to the outer central row of spots deeply suffused with black. In other examples the spots of central series on primaries are very large, often united, forming bands.

This species appears to be confined to Western China. I have received a number of specimens from each of the following places:—Huang-mu-chang, Wa-shan, Wa-ssu-kow, Chia-kou-ho, Chow-pin-sa, Chia-ting-fu, and Ta-chien-lu. It occurs up to an elevation of about 10,000 feet, and is on the wing in June and July.



## Genus ARGYNNIS.

*Argynnis*, Fabricius, Illiger's Magazin, vi. p. 283 (1807); Doubleday, Hewitson, Gen. Diurn. Lep. i. p. 171 (1848); de Nicéville, Butt. Ind. ii. p. 128 (1886).

“HEAD rather broad, hairy.

“*Eyes* nearly round, smooth.

“*Palpi* porrect, slightly ascending, divergent, projecting considerably beyond the head; the first and second joints clothed with scales and long setiform divergent hairs; the third joint with scales, and more or less appressed hairs. First joint subcylindric, curved, about one fourth the length of the second; second joint slightly curved, much swollen beyond the middle, then narrowed towards the apex, which is truncate; third joint very small, acicular, about one fourth the length of the second.

“*Antennæ* rather short, terminating in an abrupt pyriform club.

“THORAX rather stout, rounded, oval; *abdomen* moderate, about two thirds the length of the inner margin of the wing.

“*Fore wing* trigonate; the costal margin rounded; the outer about two thirds the length of the costa, sometimes slightly concave, sometimes nearly straight, often rounded; inner about equal in length to the outer margin, nearly straight. Costal nervure stout, extending about three fifths of the length of the wing; subcostal slender, sometimes emitting its first and second nervules near together before the end of the cell, the third at less than half the distance between this and the apex, the fourth rather more remote from the apex than from the third; sometimes emitting its first nervule before the end of the cell, its second at about an equal distance from the first and third, its fourth nearer to the third than to the apex. Upper discocellular nervule very short, sometimes almost wanting; middle curved upwards, longer than the lower, which is nearly straight, and anastomoses with the third median nervule at some distance from its origin.

“*Hind wing* obovate; the margins about equal, all rounded. Præcostal nervure simple, slightly curved, directed outwards; discoidal nervule appearing to be a third subcostal nervule. Discoidal cell closed by a slender discocellular, sometimes flexuous, sometimes nearly straight.

“*Fore legs* of the male fringed with long delicate hairs; tibia smooth, rather shorter than the femur; tarsus shorter than the tibia, one-jointed, subcylindric, tapering towards the apex. Of the female scaly, slightly fringed with hairs; tibia fully as long as the femur, smooth, slenderest in the middle; tarsus shorter than the tibia, smooth, five-jointed; the first joint twice the length of the rest combined; the second barely one fourth the length of the first; the third one half the length of the second; the fourth transverse, three fourths the length of the third; these joints all armed at the apex with a short spine on each side, not covered at the base by any bunch of hairs or setæ situated on the next joint; fifth joint smaller than the fourth, transverse, unarmed.

“*Middle and hind legs* with the femora and tibiæ of about equal length, the latter spined all round; the lateral spines much the longest; the spurs very distinct. Tarsi about as long as the tibiæ; all the joints nearly cylindric, spiny all round; first joint nearly equal to the others combined; the spines below arranged in two alternating series; second, third, and

fourth joints progressively shorter; the fifth longer than the third; all these, with the spines of the lower surface, arranged in two regularly opposed series. Claws curved, grooved below. Paronychia bilacinate; the outer lacinia rather slender, tapering, equal to the claw; inner much shorter. Pulvillus jointed, nearly equal in length to the claw.

“LARVA cylindric, spiny, the spines verticillate; the prothoracic segment always with at least two spines. Pupa angular, tuberculate; the head mostly bifid.” (*Doubleday, l. c.*)

### **Argynnis oscarus.**

*Argynnis oscarus*, Eversmann, Bull. Mosc. 1844, 3, p. 588, pl. xiv. figs. 1 a, b; Lep. Ross. pl. v. figs. 3, 4.

*Argynnis oscarus*, var. *australis*, Graeser, Berl. ent. Zeit. 1888, p. 90.

“A. alæ posticæ subtus ferrugineo-cinnamomeæ, nervis punctoque basali nigris, maculis marginalibus argenteis, serie ocellorum nigrorum, maculis summæ baseos fasciæque maculari media flavis; macula media nervo transverso nigro in areas duas æque magnas partita.” (*Eversmann, l. c.*)

Type from the Province of Irkoutsk in Eastern Siberia.

This species is rather like *A. amathusia*, Esper, on the upper surface. On the under surface the secondaries are reddish brown, with some pale yellow basal spots and a central band of the same colour; there is a black discoidal spot encircled with pale yellow, a submarginal series of black spots, some with pale centres, and a marginal series of silvery lunules bordered inwardly with black.

Dr. Fixsen\* records a form of *A. oscarus* from the Corea, referring it to var. *maxima*, Graeser [? var. *australis*, Graeser]. The specimens were taken in July.

In his “Revision of the Genus *Argynnis*,” Mr. Elwes says †:—“*A. oscarus*, as figured by Eversmann, is a sufficiently distinct species, though my specimens are not so bright in colour as his. He compares it with *ossianus*, as Fixsen does with *euphrosyne*; but it seems to me nearer to *selene* than to either, though it may be distinguished from both by its larger size, and by the absence of any silvery spots on the middle band of the hind wing below. I have not seen enough of the variety *australis* to say whether the difference is marked and constant, but Graeser says it has the same relation to the type as *aphirape* and *euphrosyne* have to *ossianus* and *finjal*, and that the difference is much greater.”

### **Argynnis selene.** (Plate XXIV. figs. 13, 14, vars.)

*Papilio selene*, Hübner, Eur. Schmett. i. figs. 26, 27 (1793).

*Argynnis selene*, Godart, Enc. Méth. ix. p. 277 (1819); Lang, Butt. Eur. p. 197 (1884).

*Brethis perryi*, Butler, Ann. & Mag. Nat. Hist. (5) ix. p. 16 (1882).

\* Rom. sur Léop. iii. p. 304 (1887).

† Trans. Ent. Soc. Lond. 1889, p. 549.

? *Argynnis selene*, var. *dilutior*, Rom. sur Lép. iii. p. 303 (1887); Staudinger, op. cit. vi. p. 188 (1892).

“Expands from 1.50 to 1.75 inch. Bright fulvous, spotted with black; bases blackish. Under-side: hind wings straw-coloured, marked with dark purplish brown; a row of black spots parallel to the hind margin. There are pearly or silvery spots arranged thus: two or three at the base; a central row of several, always more than one; a hind marginal row of triangular pearly spots, sometimes a streak between these and the central row.

“*Larva*. Black, with paler spines, sometimes with whitish dorsal and lateral stripes; anterior legs red. It feeds on *Viola canina* in June and September.” (*Lang, l. c.*)

Var. **perryi**, Butler. (Plate XXIV. fig. 13, ♂.) “*Male*. Allied to *B. selene*, but larger, and with all the black markings on both surfaces considerably larger and broader, more like those of *Argynnis oscarus*, the ground-colour richer (but not red as in Eversmann’s figure of *A. oscarus*); the silver spots on the under surface more metallic; the apical red-brown patch of the primaries and the two large patches on the apical and anal areas of secondaries much broader and darker.

“Expanse of wings 1 inch 9 lines.

“Posiette Bay, N.E. Corea, August.” (*Butler, l. c.*)

Occurs commonly at Gensan, Corea, in June and July.

In my paper on the Lepidoptera of Japan and Corea (Proc. Zool. Soc. Lond. 1887), I referred Gensan specimens (Plate XXIV. fig. 14, ♂) of this species to *perryi*, Butler, which I then enumerated as a doubtful species. Commenting on these specimens Staudinger (Rom. sur Lép. vi. p. 189) refers them to *A. oscarus*; but I recently sent him a pair of these Gensan specimens, and he returned them as *A. selene*. In this latter determination I am inclined to concur, and think that the examples are probably of the same form as that to which Fixsen has given the name of var. *dilutior*. This form of *A. selene* was taken by Herz in the Corea, and is distinguished by the more silvery spots on the under surface of secondaries. Staudinger records the same form from Amurland, and also a very small race from the Shilka and Bureja Mountains.

*Perryi*, Butler, has the reddish-brown patches on the underside of the wings stronger and more conspicuous than typical *A. selene*, but I have European examples with these markings equally pronounced. The figure of *perryi* is drawn from the type in the National Collection at South Kensington.

Dr. Fixsen (Rom. sur Lép. iii. p. 303) states that *Argynnis selene*, Schiff., occurs throughout the whole Mandschurian district in June and July. Generally distributed in Europe, and is also found in Armenia, Bithynia, and the Altai.

### **Argynnis pales.**

*Argynnis pales*, Schiffermiller, Wien. Verz. p. 177 (1776); Lang, Butt. Eur. p. 198, pl. xlvii. fig. 1 (1884); Elwes, Trans. Ent. Soc. Lond. 1889, p. 550.

“Expands from 1·16 to 1·40 inch. Bright fulvous, spotted with black; bases dark. Marginal fringes plain. Underside: fore wings with very indistinct black spots; hind wings with a marginal row of pearly or silvery spots; the area of the wing variegated with yellow, purple, and reddish brown, and with silvery spots mostly with a triangular outline.

“*Larva*. Grey, with a pale yellow dorsal streak; spines flesh-coloured, and set on black elevations. On violets, *V. montana* and *V. canina*, generally in July.” (*Lang, l. c.*)

Appears to be a scarce species in China. I have only received three male specimens, which were taken at an elevation of over 9000 feet in June and July. Two of these are from the high Thibetan plateau at How-kow, and the other from Pu-tsu-fong. The specimens are very brightly coloured, but there is less silvery marking than in the usual European form, although it agrees very well with some specimens in my collection from Switzerland.

In the North-west Himalayas *A. pales* is represented by the following three forms:—*sipora*, Moore (P. Z. S. 1874, p. 568, pl. lxvi. fig. 11); *baralacha*, Moore (P. Z. S. 1882, p. 242, pl. xi. figs. 1, 1 a); *generator*, Staudinger, (S. e. Z. 1886, p. 235); the Chinese specimens do not, however, agree with any of these forms.

M. Grun-Grshimailo has sent me some specimens from Amdo, which are paler than my Chinese examples and agree in some respects with *sipora*, Moore; also specimens of the *generator* form from Thian-chan.

Staudinger (Rom. sur Lép. vi.) states that a few specimens of a small form of this species were taken by Graeser near Nikolajewsk in Amurland, which are intermediate between typical *A. pales* and var. *arsilache*, and are perhaps referable to var. *lapponica*.

This variable species is widely distributed in Northern Europe, occurring at high elevations in Switzerland, the Pyrenees, and Northern Greece; its range extends to the Altai, North-eastern Siberia, Amurland, North-west Himalayas, Chumbi, Bhotan (*Elwes*), and North-west China.

### **Argynnis gong.**

*Argynnis gong*, Oberthür, Etud. d'Entom. ix. p. 15, pl. ii. fig. 9 (1884).

*Argynnis charis*, Oberthür, Etud. d'Entom. xv. p. 8, pl. i. fig. 4 (1891).

*Argynnis eva*, Grun-Grshimailo, Horæ Ross. 1891, p. 456.

Bright fulvous, marked and spotted with black. The base of primaries is black, clothed with

yellowish hairs; a black angulated bar crosses the centre of the discoidal cell, and is preceded by a round black spot in the cell, with one below it under the median nervure, and followed, at the end of the cell, by an oval one; beyond is a zigzag series of eight black spots traversing the middle area of the wing, the three nearest the costa are united, and the last two are confluent; submarginal series of black spots hardly round, and those of the marginal series are triangular. Secondaries have the basal two thirds black, clothed with long yellowish hairs; submarginal and marginal series of spots as on primaries. Fringes pale fulvous, dotted with black at the ends of the nervules, and preceded on the secondaries by an interrupted black band. Under surface of primaries rather paler than above, with similar black spots on the basal and median areas of the wing; the submarginal row of spots indistinct between the costa and third median nervule, and the marginal series is obliterated; the apical area is yellowish, traversed by a curved brown streak, and there is a yellowish longitudinal dash in each nervular interspace, that nearest the costa preceded by a silvery spot. Secondaries have the basal two thirds reddish brown, limited by a silvery-violet line; there are two silvery basal spots and the costa at the base is edged with silvery; a black dot surrounded with yellowish is placed near the centre of the cell, and a broad macular band traverses the median area of the wing; of the spots composing this band three are silvery, the first somewhat triangular with the apex pointing inwards, the fourth triangular with the apex directed outwards and its basal portion intersected by the lower discocellular, the sixth elongate; there is a submarginal series of eight purple-brown spots, with pale centres, and on the outer margin there is a short silvery bar in each interspace.

Expanse, ♂ 43-53 millim., ♀ 50-54 millim.

As mentioned by M. Oberthür, this species belongs to the *frigga* group of *Argynnis*. It can, however, be at once separated from any of its allies by the silvery bars on the under surface of secondaries, and the yellowish ones on that of primaries. No particular aberration of the under surface has been observed among the hundreds of specimens that I have received, but in several specimens certain of the spots on upper surface of primaries are more or less confluent. The most frequent variation is that in which the lower basal and seventh and eighth of central series are united, and together form a broad bar. In one or two specimens the bar across the middle of the cell is only separated from the sixth spot of central series by the median nervure. One specimen, otherwise typical, has a large square whitish spot in the first median interspace between the central and submarginal series of spots. Parallel instances of all these aberrations are known to occur in many species of *Argynnis*.

Rather widely distributed in Western China, but most common at Ta-chien-lu and at How-kow in Thibet. The form of this species from Yunan, to which M. Oberthür has given the name of *M. charis*, has the silver marginal spots on under surface of secondaries broader than in the type, but it does not otherwise exhibit any difference of importance.

Var. **eva**, Grum-Grshimailo. "Species (an varietas tantum?) *Argynnis gong*, Oberth., proxima, sed minor, alis latioribus, supra lætius tinctis, in disco posticarum basin versus nigrescenti-viridescenti non mixtis, litura marginali inter nervos late interrupta, subnulla, maculis alarum omnium minoribus.

"Subtus vittis argentosis submarginalibus porrectioribus, anticis in apice pallidioribus flavescenti mixtis maculis nullis, maculis disci minoribus; posticis magis versicoloribus, macula venæ transversæ semi-argentosa. ♂ ♀ 19-21 millim.

"In montibus Sinin-schan et Dshachar detecta." (*Gr.-Gr.*)

This appears to be a distinct local form of *A. gong*, which differs from the type principally in its paler colour and the absence of the black coloration on basal portions of the wings. I am indebted to M. Grum-Grshimailo for specimens of this variety.

### **Argynnis eugenia.** (Plate XXIV. fig. 15, ♂ var.)

*Argynnis eugenia*, Eversmann, Bull. Soc. Imp. Natur. xx. ii. p. 68 (1847); Lep. Ross. v. p. 24, pl. ii. figs. 1, 2 (1851).

*Argynnis eugenia*, var. *rhea*, Grum-Grshimailo, Horæ Ross. 1891, p. 456.

"*A.* alis supra fulvis, nigro maculatis; posticis subtus virescenti-ferrugineis argenteo maculatis macula centrali elongato-cuneiformi flexuosa serieque ocellorum externa.

"Le dessus des quatre ailes est d'un fauve un peu jaunâtre, avec la base noirâtre, les taches noires ordinaires, dont celles de la rangée externe sont à peu près rondes, et une bordure noire à petites taches d'un fauve jaunâtre.

"Le dessous des ailes supérieures est d'un fauve jaunâtre pâle, tachete de noir, avec le sommet jaunâtre et des taches ovales limbales blanchâtres, encadrées de brun noirâtre.

"Le dessous des inférieures est d'un ferrugineux tirant sur le verdâtre, avec des taches argentées très exprimées, dont quatre environ sont basales, trois des plus grandes de la rangée médiane et sept de la rangée limbale. La tache argentée médiane est très allongée, cunéiforme et infléchie, avec sa pointe tournée vers le bord extérieur. Les taches argentées limbales sont aussi très remarquables, elles sont ovales et longitudinales, ce que l'on n'observe dans aucune autre *Argynne*.

"Entre la rangée médiane et la limbale, l'aile est traversée par une rangée de taches jaunâtres, marquées d'un gros point noir central, un peu pupillé d'atomes jaunâtres." (*Eversmann, Lep. Ross.*)

Var. **rhea**, Gr.-Gr. (Plate XXIV. fig. 15, ♂.) "Alis lætius tinctis, basin versus minus viridescenti-nigro squamatis; subtus posticis macula venæ transversæ argentosa permagna, ad marginem externum magis porrecta." (*Grum-Grshimailo, l. c.*)

M. Grum-Grshimailo describes the above form of *A. eugenia* from Ando and I have received specimens from Ta-chien-lu and Pu-tsu-fong in Western China, and from How-kow in Thibet, including one female example

from the latter place. As this sex has not been previously recorded I append a description :—

*Female.* Greenish grey, with a slight fulvous tinge here and there; the basal half of the primaries, basal half of secondaries, and outer marginal area of all the wings are blackish; the latter enclosing a series of whitish spots. Under surface paler than that of the male; secondaries and apices of primaries greenish yellow.

Expanse 48 millim.

In one male specimen from How-kow most of the spots forming the usual central and outer bands are absent on primaries, and those of the secondaries very minute; the primaries have a conspicuous black mark about the middle of the submedian interspace.

This species is a member of the group of *Argynnis* which includes the four following species:—*A. clara*, Blanchard \*, from the Province of Tihri Garhwal, North-west Himalayas, occurring at an altitude of 12,000 feet; *A. gemmata*, Butler †, and *A. altissima*, Elwes ‡, which are both found in Native Sikkim at high elevations; and *A. mackinnonii*, de Nicéville §, from Basahar, North-west Himalayas, 11,000 feet.

### **Argynnis latonia.**

*Papilio lathonia*, Linnæus, Syst. Nat. xii. p. 786 (1767); Hübner, Eur. Schmett. i. figs. 59, 60 (1793?), fig. 613 (1823?); Herrich-Schäffer, Schmett. Eur. i. figs. 152–154 (1844).

*Argynnis latonia*, Godart, Enc. Méth. ix. p. 267 (1819); Kollar, Hügel's Kaschmir, iv. pt. 2, p. 440 (1848).

*Argynnis lathonia*, Lang, Butt. Eur. p. 207, pl. xlix. fig. 2 (1884); de Nicéville, Butt. Ind. ii. p. 137 (1886).

*Argynnis isæea*, Gray, Lep. Ins. Nepal, p. 11 (1846); Horsfield and Moore, Cat. Lep. Mus. E. I. C. i. p. 156 (1857).

“*Male.* Upperside fulvous, with black spots; fore wing with the base, costa, and inner margin, hind wing with the basal and abdominal area widely, mottled with darker-coloured scales. Fore wing with a reniform spot enclosing a portion of the ground-colour, a transverse spot beyond, and one closing the end of the cell. A discal twice-angled series, with an additional spot towards the base in the submedian interspace; a suffused subcostal spot; a submarginal series of six spots, of which the three upper ones are small and round, the three lower larger and less regularly shaped; a marginal row of lunules; a black marginal band bearing a

\* Jacquemont's Voy. dans l'Inde, iv. p. 20, Insectes, pl. ii. figs. 2, 3 (1844).

† Ann. & Mag. Nat. Hist. (5) vii. p. 32, pl. iv. fig. 1 (1881).

‡ Proc. Zool. Soc. Lond. 1882, p. 403, pl. xxv. fig. 8.

§ Bomb. Nat. Hist. Journ. vi. p. 346, pl. F. figs. 4 ♂, 5 ♀ (1891).

series of fulvous linear spots; towards the apex this border in some specimens coalesces with the marginal spots, leaving three fulvous spots between. Hind wing with a spot closing the cell, three angled series of black spots in continuation of those on the fore wing, the outer margin as on the fore wing. Underside paler. Fore wing with the submarginal series of black spots pupilled with silver, a prominent silver spot within the uppermost spot of this series, and five apical marginal silver spots increasing to the third, which is the largest. Hind wing with a silver spot at the base, just beyond the præcostal nervure, a very large silver spot between the costal and subcostal nervures, with a triangular one beyond, reaching the interspace below; two small silver spots towards the base of the cell, a very large one beyond, extending beyond the cell, an elongated silver spot at the base of the submedian interspace, with another somewhat quadrate one beyond it; two elongated silver spots below divided by the internal nervure. A small round silver spot towards the base of the first median interspace, a discal series of three silver spots increasing from the first median to the submedian interspace, a twice curved discal series of small dark spots with silver pupils and outer fulvous ring; a very prominent marginal series of subtriangular spots, of which the first, fourth, and seventh are smallest, the intermediate pairs of spots about twice the size. Cilia pale fulvous. The margin bears two fine dark ferruginous lines, and all the silver spots are more or less defined with black. *Female* similarly marked, but the dark basal ground-colour of the upperside distinctly greenish." (*de Nicéville.*)

I received a few specimens of this species from Ta-chien-lu; they are referable to the form known as *isæca*, Gray, from the Himalayas. Mr. Elwes, referring to this form (*Trans. Ent. Soc. Lond.* 1889, p. 556), says that it can be distinguished from European *latonia* "by the silvery patches in the cell of the hind wing below being lanceolate or rather pointed towards the outside, and angled towards the costa, instead of oblong, as in European specimens. This character fails to distinguish about four of my forty specimens. A more constant and better distinction is the form of the silver patch at the abdominal angle, which extends in the Himalayan examples in a band of diminishing breadth almost to the end of the lanceolate patch above mentioned, whereas in the European specimens it never extends beyond the first median nervule. As a rule also, the Himalayan specimens are larger and rather paler in tint on the upperside."

Ta-chien-lu, in Western China, so far appears to be the most eastern limit of the geographical range of this species. In the Himalayas it is found as far west as Kashmir, and eastward to Sikkin, occurring throughout the whole year in some places.

The typical form occurs throughout North Asia, Persia, Temperate Europe, and North Africa.

Dr. Lang (*l. c.*) gives the following description of the early stages of *A. latonia* :—



- “**LARVA.** Greyish brown, with a white dorsal line. It has sixty spines, four on the first and last segments, and six on each of the others, those of the first two are shorter than the rest, the central ones being the longest. Feeds solitarily on *Viola tricolor* and *Onobrychis* in May and August.
- “**PUPA.** Grey anteriorly, green posteriorly, with gold spots.”

### **Argynnis daphne.**

*Papilio daphne*, Schiffermüller, Wien. Verz. p. 177 (1776); Hübner, Eur. Schmett. i. figs. 45, 46 (1793–1794).

*Argynnis daphne*, Godart, Enc. Méth. ix. p. 270 (1819); Lucas, Ann. Soc. Ent. Fr. 1866, pp. 219, 220; Lang, Butt. Eur. p. 205, pl. xlvi. fig. 5 (1884); Pryer, Rhop. Nihon. p. 28, pl. vii. fig. 9 (1889).

*Argynnis rabdia*, Butler, Ann. & Mag. Nat. Hist. (4) xix. p. 93 (1877).

*Argynnis daphne*, var. *fumida*, Butler, Ann. & Mag. Nat. Hist. (5) ix. p. 16 (1882).

“Expands from 1·60 to 2·0 inches. Bright fulvous; hind margin black, fringes not variegated; wings with the usual black spots, central row very irregular, two rows running parallel to the hind margin. Underside: hind wings greenish yellow at the base, central band yellow; external to this the wing is marbled with reddish purple, and has a row of black spots with light centres; hind margin light yellow.

“**Larva.** Blackish brown, with yellow lateral lines, and a double yellow dorsal stripe; the spines are yellow, tipped with black. Feeds on *Rubus idæa* and *Violaceæ* (?) in May.” (*Lang, l. c.*)

**Var. rabdia**, Butler. “Larger [than *daphne*], paler, less heavily spotted above, and much more so below, much duller and more sickly coloured on the underside, with the transverse lines of secondaries chocolate-brown; the lilacine streaks replaced by slaty grey. Expanse of wings 2 inches 3 lines.” (*Butler, l. c.*)

**Var. fumida**, Butler. “Differs from the European type [of *A. daphne*] in its duller and more smoky colouring, and larger black spots on both surfaces; it is, however, of the same size, and therefore considerably smaller than *A. rabdia*, from which it differs also in duller coloration.

“Two females, Posiette Bay, N.E. Corea. We have the male of this form from Yesso.” (*Butler, l. c.*)

There appears to be very little difference between the forms described by Mr. Butler as *rabdia* and *fumida*; the types, which are in the National Museum at South Kensington, are not in good condition. The name *rabdia* may be retained for the exaggerated form of this species, which is not rare in Central Japan and Yesso, and is very common at Gensan, Corea. Some of the specimens are remarkably fine, attaining a wing-expansion of 68 millim. in the female. Lucas (*l. c.*) records specimens of *A. daphne* from the neighbourhood of Peking, and this is the only Chinese locality for the species that I am aware of.

According to Lang, *A. daphne* occurs in "elevated woods in Southern and Eastern Germany, France, Spain, Switzerland, Italy, the south-west of Europe, Asia Minor, Armenia, the Altai, and the Amur."

### **Argynnis ino.**

*Papilio ino*, Rottemburg, Naturf. vi. p. 19, pl. i. figs. 3, 4 (1775); Esper, Schmett. i. pt. 2, pl. 76. figs. 1 a, 1 b (1782).

*Argynnis ino*, Godart, Enc. Méth. ix. p. 271 (1819); Lang, Butt. Eur. p. 206, pl. xlvi. fig. 6 (1884).

"Expands from 1.25 to 1.75 inch. Very much resembles *A. daphne*, but it is smaller, the ground-colour of the wings is darker fulvous, the black spots are closer together, and the hind margins are more broadly black; the marginal fringes are narrowly streaked with black. The wings are much darker at the base than in *daphne*. Underside: the markings of the hind wings greatly resemble those of *daphne*, but are more defined on account of the darker colour of the purple marbling, which is very dark violet, the light-centred spots showing out upon it very distinctly." (*Lang, l. c.*)

*Larva*. "Yellowish, with brown lateral stripes, dorsal stripe brown, spines whitish yellow. Feeds on *Urtica urens* and *Spirea* in May." (*Lang, l. c.*)

Typical *A. ino* does not, so far as I know, occur in any part of the region under present consideration; the form generally found in Japan and the Corea is much larger, brighter, and more strongly marked than the European type. Some of the Central Japanese examples agree with the large pale form from Amurland described by Staudinger\* as var. *amurensis*. The specimens range in expanse up to 58 millim. in the male.

*Distribution*. Europe, Asia Minor, Altai, Amur, Corea, Japan.

### **Argynnis aglaia.** (Plate XXII. fig. 6, var.)

*Papilio aglaia*, Linnæus, Syst. Nat. xii. p. 785 (1767); Hübner, Eur. Schmett. i. figs. 65, 66 (1793-1794).

*Argynnis aglaia*, Godart, Enc. Méth. ix. p. 264 (1819); Herrich-Schäffer, Schmett. Eur. i. figs. 140, 141 (1844); Lang, Butt. Eur. p. 209, pl. l. fig. 1 (1884); Pryer, Rhop. Nihon. p. 28, pl. vii. fig. 11 (1889).

*Argynnis fortuna*, Janson, Cist. Ent. ii. p. 154 (1877).

"Fringes black and whitish. Nervures of fore wings with black lines in the male. All the wings bright fulvous in the male, duller in the female. Hind margins black; bases dusky, darkest in the female; the markings consist of the usual black spots and black marginal lunules; the square spots near the centre of the wings are joined so as to form a narrow wavy band.

\* Rom. sur Léop. iii. p. 146 (1887).

Underside : fore wings light reddish brown, spotted with black ; apices with green and silver marginal spots. Hind wings bronze-green, with a band of straw-colour tinged with green running parallel to the hind margin ; silver spots large and distinct, arranged in three rows ; first a row of semilunar spots along the hind margin, then a central row, internal to this is a row of three spots, and then three more at the base. There are never any brown silver-centred spots between the marginal and central rows, or any costal silver spot between the central and internal rows." (*Lang, l. c.*)

Expanse of Chinese specimens, ♂ 64 millim., ♀ 64–69 millim.

*Larva.* "Blackish brown, with two pale yellow dorsal lines and reddish-brown lateral spots ; spines blackish. Feeds on *Viola canina* in May and June." (*Lang, l. c.*)

The larva is described in greater detail in Buckler's 'Larvæ of British Butterflies,' i. pp. 71–73.

The typical form of *A. aglaia*, as described above, is widely distributed in Western China, but in Japan and Corea the species is represented by the following form :—

Var. **fortuna**, Janson. "Allied to *A. aglaia*, the black markings on upperside of primaries somewhat similar, but the posterior spot of the inner transverse series much nearer the outer margin, being in a line with the discal row, the corresponding spot of which is small and also nearer the outer margin, the submarginal row of spots are smaller, and the marginal band much narrower ; the secondaries differ in having the inner zigzag band produced into a rather long point on the centre of the wing, which replaces the third spot of the discal series ; beneath, the primaries have a greenish apical patch, with three inner and four marginal silvery spots ; the secondaries are greenish, speckled with black ; two small spots just beyond the cell, and a short submarginal fascia ochreous, the silvery spots are disposed as in *aglaia*, except the fourth and seventh of the discal series, which are very small and nearer the outer margin, and the marginal spots are larger." (*Janson, l. c.*)

Expanse, ♂ 68–75 millim., ♀ 76–80 millim.

This form only differs from the type in being generally larger and brighter on the upper surface ; on the under surface the silver spots of secondaries are larger, and those on apical area of primaries more distinct. Gensan specimens are even brighter than those from Japan.

In Amurland typical *A. aglaia* occurs in the north and var. *fortuna* in the south.

Among the specimens from Western China are two examples of the *fortuna* form, but the silver spots on the under surface of secondaries are much larger and, with the exception of one at the end of the cell, which is quadrate with a projection from its upper inner angle, more elongate in shape ; there are no ochreous spots beyond cell, and the ochreous submarginal band is very narrow in the female ; the primaries have five or six silver marginal spots. Expanse, ♂ 74 millim., ♀ 80 millim. (Plate XXII. fig. 6, ♀.)

One male, Wa-shan, and one female, Wa-ssu-kow.

*A. aglaia* is generally distributed throughout Western China, North-west and Central Japan, Corea, Amurland, and Europe. In the North-west Himalayas it is represented by *A. vitatha*, Moore, which Mr. de Nicéville considers to be "at best but a very slight variety of *A. aglaia*."

**Argynnis adippe.** (Plate XXII. figs. 3, 4, 5, vars.)

*Papilio adippe*, Linnæus, Syst. Nat. xii. p. 786 (1767); Hübner, Eur. Schmett. i. figs. 63, 64 (1793-1794).

*Argynnis adippe*, Godart, Enc. Méth. ix. p. 265 (1819); Lang, Butt. Eur. p. 212, pl. li. fig. 1 (1884); Pryer, Rhop. Nihon. p. 28, pl. vii. figs. 1, 2 (1889).

*Argynnis vorax*, Butler, Trans. Ent. Soc. Lond. 1871, p. 403; Lep. Exot. p. 151, pl. liv. fig. 1 (1873).

*Argynnis pallescens*, Butler, Cist. Ent. i. p. 164 (1873).

*Argynnis locuples*, Butler, Ann. & Mag. Nat. Hist. (5) vii. p. 134 (1879).

"Expands from 1·90 to 2·20 inches. The male closely resembles that of the last [*A. niobe*], but the black lines along the nervures of the fore wings are thicker. The female is brighter fulvous, and the dark markings are not so intense as in *A. niobe*, neither is there the black shading towards the base of the wings found in that species. Underside: fore wings brighter fulvous than in *A. niobe*, with distinct silvery markings near the apex. Hind wings light yellow, with a fulvous tinge; spots well defined and silvery; between the hind marginal and central rows is a series of reddish spots with silvery centres; the inner margin is greenish, with silvery gloss." (*Lang, l. c.*)

*Larva*. "Reddish brown, with a whitish dorsal stripe, and a black spot on either side of this on every segment; the spines light brown. Feeds on *Viola tricolor* and *V. odorata* in May and June." (*Lang, l. c.*)

The early stages of *A. adippe* are described at some length in Buckler's 'Larvæ of British Butterflies,' i. pp. 65-71.

Var. **vorax**, Butler. (Plate XXII. fig. 5, ♂.) "Affinis *A. adippe*, differt alis anticis costa multo longiore, margine externo magis arcuato, posticis margine interno longiore, omnibus supra maculis submarginalibus fulvis angustioribus; subtus characteribus discoideis minus conspicuis; anticæ maculis discalibus majoribus; posticæ pallidiores, area basali viridiores; maculis argenteis vix nigro marginatis; serie ocellorum minus angulata; lunulis submarginalibus viridibus. Exp. alar. unc. 3, lin. 2.

"Nearly allied to *A. adippe*, but more like *A. paphia* in form." (*Butler, l. c.*)

This form, the type of which was taken at Shanghai, occurs at Kiukiang and Chang-yang, Central China; but I have not received it from any of the western localities.

Some of my specimens attain a wing-expansion of 78 millim. in the male, and 90 millim. in the female.

**Var. *pallescens***, Butler. "*Male and female.* Intermediate between *A. vorax* and *A. adippe*; size of the latter. Differs from *A. vorax* above in the more dusky tint of basal half of secondaries; below in the presence of three subapical silver spots (two submarginal and one subcostal) in primaries; a series of small silver spots, partly obscured by green and ochreous scales, just within the central waved discal series of secondaries; the ocelli better defined; and a submarginal series of seven large spots encircled by a green zone. Expanse of wings 2 inches 5 lines.—Hakodadi (*Whitely*); four examples, B. M." (*Butler, l. c.*)

**Var. *locuples***, Butler. "*Male.* Size of *A. vorax*, pattern and coloration of the upper surface similar, excepting that the spots of the discal series are more elongated, and the submarginal connected lunate spots of the secondaries are rather broader. Primaries below with silvery apical submarginal spots, as in *A. jainadeva*, the darker markings on the apical area cupreous brown, with olivaceous margins, the discoidal markings smaller, otherwise as in *A. vorax*: secondaries below similar in pattern to *A. pallescens*, but the ground-colour more golden in tint, and the submarginal silver spots less sharply defined; the disk, between the series of ferruginous ocelloid spots and the green-bordered silver submarginal series, is clear buff-colour. Expanse of wings 2 inches 10 lines.

"*Female.* Larger than the male, duller and greener above, with all the black spots larger. Below with eight additional subapical silver spots on the primaries, five of them forming a decreasing submarginal series, the ground-colour duller and more uniform in tint: secondaries with all the silver spots considerably larger, the third series well defined and continued to the submedian vein, so that there are five complete series; the submarginal series formed of broad black-bordered arched spots; the ground-colour rather deeper, the ocelloid ferruginous spots frequently larger than in the male, but always darker. Expanse of wings 2 inches 10 lines to 3 inches 3 lines." (*Butler, l. c.*)

The commonest form of *A. adippe* throughout the area dealt with in the present work is var. *locuples*.

The silver apical spots on under surface of primaries is a variable character; in some male specimens of this form they are entirely absent.

**Var. *coredippe***, var. nov. (Plate XXII. figs. 3 ♂, 4 ♀.) *Male.* Rather deep fulvous; the venation of all the wings distinctly black and prominent. Primaries have the black markings as in the type, but the outer margin is broadly black and is traversed by a series of roundish spots of the ground-colour; androconia are only present on the first median nervule; the inner area of the wing is blackish between the submedian nervule and the inner margin, and is sprinkled with fulvous scales; fringes white, chequered with black. Secondaries with black markings as in the type, but the outer margin is bordered with black as on primaries; the short black marks in the discoidal cell are more inwardly oblique and parallel with each other, and the basal area is blacker than in the type. Under surface similar to that of the European var. *cleodora*, but the secondaries have a greenish tinge, and the fulvous on primaries is often confined to a smaller area.

*Female.* Ground-colour paler than in the male, suffused with greenish-black; the spots of ground-colour in the outer marginal border are linear towards the inner angle of primaries and anal angle of secondaries. Under surface more distinctly greenish on basal half of secondaries; the silver spots are generally well developed and the ocelli are centred with silver, but sometimes, as in the example of this sex figured, the silver spots, with the exception of those of ocelli, are absent.

Expanse, ♂ 72-75 millim., ♀ 74-82 millim.

This form is fairly constant on the upper surface, but some male specimens have the basal half of secondaries black. There is a specimen of each sex in the National Museum at South Kensington from Wei-hai-wei, Shantung promontory, China. These were captured in June, as also were my specimens, all of which are from Gensan, in the Corea.

*A. adippe* is a most variable species, and a number of the forms have been named.

Dr. Fixsen (Rom. sur Léop. iii. p. 306) records *A. adippe* from Corea, and states that the species is exceedingly variable. He describes a form as *xanthodippe*, comparing it with *vorax*, Butler.

*Distribution.* Japan, China, Corea, Amur, Altai, Europe, and Asia Minor.

### **Argynnis ornatisissima**, sp. nov. (Plate XXII. figs. 1 ♂, 2 ♀.)

Allied to *A. adippe*, but the colour is much more brilliant; androconia, in the male, stronger than in *adippe*, and commencing nearer the origin of the nervules; the central black transverse band, which in *adippe* is macular and much angulated, is in this species almost uniform in width throughout, the upper part is curved and the lower portion arcuated; the discoidal mark on secondaries is well defined and conspicuous. Fringes heavily chequered with black. The female is strongly tinged with metallic green on the basal area of all the wings; there is a longitudinal black dash in the submedian interspace.

The under surface cannot be satisfactorily compared with any of the forms of *A. adippe* with which I am acquainted, but it agrees in some respects with Spanish specimens in my collection. The secondaries are brilliant green; the costa at base and the abdominal fold are bright silver; the usual silver spots are very brilliant, and all the larger ones are bordered with black.

Expanse, ♂ 72 millim., ♀ 76 millim.

Three specimens taken in the neighbourhood of Ta-chien-lu in July at an elevation of 10,000 feet.

### **Argynnis nerippe**. (Plate XXII. figs. 7 ♂, 8 ♀.)

*Argynnis nerippe*, Felder, Wien. ent. Mon. vi. p. 24 (1862); Reise Nov., Lep. iii. pl. l. figs. 1, 2 (1867); Pryer, Rhop. Nihon. p. 28, pl. viii. figs. 1 a, 1 b (1889).

*Argynnis coreana*, Butler, Ann. & Mag. Nat. Hist. (5) ix. p. 15 (1882).

- “*Alis supra fulvis, figuris cellularibus, striga discali maculari flexuosa, maculis grossis exterioribus, aliis limbalibus inflexis strigaeque submarginali maculis trigonis confluentibus formata, nigris; posticis subtus pallide ochraceis, in ♂ re viridi-, in ♀ na cinereo-atomatis, maculis disci aliisque seriatis submarginalibus inflexis argenteis.*”
- “*Japonia. Affinis A. adippe, Wien. Verz., var. chlorodippe, Boisd., sed robustior, alæ minus dentatæ et signaturis marginalibus optime distinguendæ.*” (*Felder, l. c.*)

*Argynnis coreana*, Butler.—“Nearly allied to *A. nerippe*, Felder, but the sexes more equal in size; the black spots on both surfaces of both sexes considerably smaller, those upon the median interspaces of the primaries not quadrate on either surface; ground-colouring paler; male with the thickened sexual patch upon the first median branch very broad and prominent, and the submarginal spots isolated instead of united into a band as in the female; on the under surface also all the spots are smaller, the silvery spots less prominent, and the discal ocelloid spots of the secondaries very small and dull in colouring; the female is altogether duller, has the bases of the wings above of an altogether greener colour, with the black lines on the basal area thicker, the submarginal pale spots whiter, the secondaries with a black spot on the radial instead of on the subcostal interspace, thus making an uninterrupted series of four spots; the apical area of primaries and the whole ground-colour of the secondaries dull olive-green; the silvery spots on the primaries better formed, and those on the secondaries larger than in Yokohama females, although decidedly smaller than in Nikko females of *A. nerippe*. Expanse of wings, ♂ 3 inches, ♀ 3 inches 4 lines.—Two males, Posiette Bay, N.E. Corea; one ♀, Hakodate. The form of this species is somewhat different from that of *A. nerippe* (seven fine examples of which are before me), the wings being somewhat more elongated and the costa of primaries consequently less arched.” (*Butler, l. c.*)

*Coreana*, Butler, is said to differ from *nerippe* in the prominence of the sexual patch on the first median branch of the fore wing; but this character is variable and may be altogether absent.

Staudinger (*Rom. sur Lép. v. p. 87*) includes Posiette Bay in his Amur Region; but he does not appear to include *coreana*, Butler, in his list of species.

*A. nerippe* is most nearly allied to *A. adippe* and *A. niobe*, and, although it is usually larger than ordinary specimens of either species, there is very little difference in size between *A. nerippe* and some *A. adippe* from Changyang and Kiukiang.

Specimens of both sexes of *A. nerippe* from Fusan are much paler than any other examples in my series; the black spots are very small, and the males have the sexual mark very poorly developed, in fact, in one specimen this mark appears to be quite absent.

Females from the Isle of Kiushiu and some of this sex from Nagasaki have the basal area, inner margin of primaries, and the greater part of secondaries rather strongly suffused with greenish; the black spots are very large, and those of the central and marginal series confluent, forming bands. On the

under surface the silver spots of secondaries are always larger and more conspicuous in the females than in the males, and the female only is adorned with silver spots on apical area of primaries.

Mr. Elwes\* considers that *A. nerippe* is allied to *A. niobe*, and thinks that it may possibly be an extreme eastern form of that species.

Common in Japan, Corea, and Western and Central China. At Kiukiang it is more abundant than *A. adippe*.

### **Argynnis laodice.**

*Papilio laodice*, Pallas, Reise, i. App. p. 470 (1771?); Esper, Schmett. i. pt. 2, pl. 93. fig. 1 (1785?), pl. 102. fig. 4 (1790?).

*Argynnis laodice*, Godart, Enc. Méth. ix. p. 270 (1819); Boisduval, Icones, pl. xxi. figs. 4-6 (1832); Lang, Butt. Eur. p. 213, pl. li. fig. 4 (1884); Pryer, Rhop. Nihon. p. 29, pl. viii. fig. 5 (1889).

*Argynnis laodice*, var. *japonica*, Ménétré, Cat. Mus. Petr. p. 102, pl. x. fig. 3 (1857).

“Expands from 2.25 to 2.50 inches. Hind margins of fore wings slightly concave, especially in the female. Hind margins of hind wings rather more dentate than in the preceding species. All the wings fulvous in both sexes, brightest in the male, spotted with black as in the other species, but the hind marginal spots are more distinctly separated and less crescentic in form. Underside: fore wings fulvous, spotted with black, tinged with yellowish green at the apex and along the hind margins. Hind wings with all the silver spots absent, except the central row; the basal portion of the wing as far as this is yellow, marked with one or two fine red lines; the silvery spots are small and indistinct in the male, but more strongly defined in the female; immediately external to these is a dark brownish purple band, shading off into lighter purplish brown, upon which are two parallel rows of dark spots; the hind margin is rather broadly light yellow.” (*Lang, l. c.*)

Var. *japonica*, Ménétré. “En dessus, les ailes supérieures offrent, chez presque toutes les femelles, une tache blanche située près du bord antérieur, un peu au dessus, et intérieurement de la 1<sup>e</sup> tache noire de la 2<sup>e</sup> rangée du bord externe; toutes les taches noires sont disposées comme chez les individus des différentes contrées de la Russie, mais plus grosses et bien marquées. En dessous, les couleurs sont beaucoup plus vives chez cette race du Japon; les ailes supérieures présentent, au côté interne de chaque tache noire de la 2<sup>e</sup> rangée près du bord externe de ces ailes, une tache blanche bien marquée qui chez les individus du midi de la Russie se laisse à peine soupçonner; la moitié basale des ailes inférieures est de teinte plus verdâtre, les taches argentées sont plus grandes et plus brillantes, et la teinte violette de la moitié postérieure de ces ailes est plus foncée et plus brillante.” (*Ménétré, l. c.*)

This species exhibits a good deal of variation in size and also in colour. Russian specimens are always paler than those from places further east.

\* Trans. Ent. Soc. 1889, p. 559.



Examples of the female from the Isle of Kiushiu have very large black spots. On the under surface the ground-colour of secondaries varies from fulvous yellow to pale green, the outer half, limited by an irregular macular silvery band, is sometimes greenish and sometimes purple-brown, but in all cases traversed by undulated lilacine bands which vary in width and intensity; in some specimens the outer area of secondaries, whether greenish or purple-brown, is suffused with lilacine. The reddish or brownish central band on secondaries varies greatly in width, and is sometimes composed of two lines which lie apart on the costa, but unite at their termination at submedian nervure; there is a projection from the outer line extending almost to the middle of the wing.

The Western Chinese examples of *A. laodice* seem to approach very close to *A. rudra*, Moore\*, which Mr. Elwes† considers to be a local race of *A. laodice*, and in this opinion I am inclined to concur.

Amurland specimens are rather larger and brighter coloured than European, and appear to be intermediate between the type and the Japanese form *japonica*, Mén.

Distributed throughout Russia, Amurland, Japan, Corea, and China. M. Oberthür‡ records it as common in the Isle of Askold, and states that examples from thence do not differ from South-Russian specimens. It has also been found in Germany.

**Argynnis ruslana.** (Plate XXIII. figs. 3 ♂, 4 ab. ♀.)

*Argynnis ruslana*, Motschulsky, Bull. Mosc. 1866, ii. p. 117; Pryer, Rhop. Nihon. p. 29, pl. viii. fig. 6 (1889).

*Argynnis lysippe*, Janson, Cist. Ent. ii. p. 154 (1877).

“Statura *Arg. laodice* sed minor, maculis distinctior. ♀ alis supra fulvis nigro maculatis, ♂ antice immaculatis, externe medioque fasciis violaceo-fuscis, margine utrinque macula subalbida. Exp. al., ♀ 21 l., ♂ 20 l.” (*Motschulsky, l. c.*)

*Argynnis lysippe*, Janson. “Allied to *A. laodice*, Pall., and *A. japonica*, Ménétr., but considerably larger, and with the primaries much more produced at the apex. Above it differs from *japonica* in being of a darker and slightly greenish tint, with the fringes dirty brown; the primaries have the second and third transverse marks in the cell angular, closer together, and united at their lower ends, the black spots are larger, the second and fifth of the inner series

\* Cat. Lep. Mus. E. I. C. i. p. 157 (1857).

† Trans. Ent. Soc. Lond. 1889, p. 561.

‡ Etud. d'Entom. v. p. 14 (1880).

narrower, more curved, and continued inwardly along the nervures; the secondaries have the inner series of spots united and forming an irregular zigzag band, and the marginal line is greenish brown; beneath, the primaries have a large greenish apical patch extending further inwardly and along the outer margin than the brown one of *japonica*, the submarginal black spots are very indistinct, and the transverse row of white spots is entirely absent; the basal half of secondaries is greener, and the reddish transverse basal line is not waved, the silvery spots are better defined, the apical half is darker, with two rows of ill-defined lunular spots, and a marginal band metallic green. Expanse of wings  $3\frac{1}{2}$  inches." (*Janson, l. c.*)

Mr. Elwes (Trans. Ent. Soc. Lond. 1889; p. 562) is of opinion that Motschulsky's description of *A. rursana* cannot be applied to this insect, and suggests that Janson's *A. lysippe* should be adopted as the type. It is true that, in a general way perhaps, Motschulsky's diagnosis of *rursana* would apply to several species of *Argynnis*, but, as he distinctly refers to *A. laodice*, it seems clear that he had an insect under observation which agreed, in most characters, better with that species than with any other *Argynnis* with which he was acquainted. In the matter of size *A. rursana* varies from 56–78 millim. in the male, and from 76–82 millim. in the female. It is generally larger than Russian *A. laodice*, but some Chinese specimens of the last-named species are larger than any *A. rursana* that I have ever seen. On the other hand, I have a specimen of *A. rursana* from Chang-yang which is no larger than the smallest Russian example of *A. laodice* in my series.

The outer margin of primaries is concave in both sexes of *A. rursana*, and the male has the sexual mark on the first and second median nervules and the submedian nervure. In the male of *A. laodice* this mark is only present on the first median nervule and the submedian nervure. The black spots of central series on secondaries in the male and on all the wings in the female are united, forming angular bands. On the under surface of the female the outer half of secondaries is olive-green, traversed by some violet-grey interrupted bands; but in the male the under surface of all the wings is very similar to that of *A. laodice*, except as regards the central line of the secondaries, which in both sexes of *A. rursana* is always less waved than in *A. laodice*.

A curious aberration of the female, taken at Chang-yang by a native collector, is figured (Plate XXIII. fig. 4). This species as closely resembles *A. paphia* on the upper surface as it does *A. laodice* on the under surface, consequently it may often be passed over by the collector for one or the other of these species, as it occurs with them.

Fairly common at Chang-yang in Central China, and in the province of Kwei-chow in Western China. It is not rare in Japan at Hakodate in August, and I have taken it at Nikko in September. Pryer gives Yokohama also as a locality. It occurs in Amurland, Askold, and probably in Corea.

**Argynnis paphia.** (Plate XXIII. fig. 2, var.)

*Papilio paphia*, Linn. Faun. Suec. p. 281 (1764); Hübner, Eur. Schmett. i. figs. 69, 70 (1793-1794), figs. 935, 936 (1829-1841).

*Argynnis paphia*, Godart, Enc. Méth. ix. p. 268 (1819); Lang, Butt. Eur. p. 214, pl. lii. fig. 1 (1884); Pryer, Rhop. Nihon. p. 29, pl. viii. fig. 4 (1889).

*Argynnis paphioides*, Butl. Ann. & Mag. Nat. Hist. (5) vii. p. 134 (1881).

Var. *Papilio valesina*, Esper, Schmett. i. pt. 2, pl. 107. figs. 1, 2 (1800?).

*Papilio paphia*, Hübn. Eur. Schmett. i. figs. 767, 768 (1824-1828).

“Expands from 2.25 to 2.75 inches. The male has all the wings bright fulvous, spotted with black; bases blackish; fore wings with thick black lines running along the nervures; hind wings with the spots large and distinct.

“The *female* is much duller fulvous, the fore wings have their hind margins distinctly concave and the nervures are not marked with black lines. Underside: fore wings fulvous, spotted with black, greenish at the apex. Hind wings shining green, with two short silver streaks near the base, and another extending right across the centre of the wing; the hind margin has a silver streak throughout its entire length. The silvery markings are much more distinct in the female than in the male.” (*Lang, l. c.*)

Var. *valesina*, Esper. A form of the female in which the ground-colour of all the wings is dark greenish, the primaries have some pale spots towards apex and the usual black markings on all the wings.

Var. *paphioides*, Butler. “Near to *A. paphia* of Europe, but considerably larger, the primaries more produced, the female always greenish above (but not so dark as the variety *valesina*), under surface with the silver bands and border of secondaries much more metallic. Expanse of wings, ♂ 3 inches, ♀ 3 inches 4 lines.” (*Butler, l. c.*)

“*Larva* dark brown, with two narrow light yellow dorsal stripes, and lateral reddish-yellow lines; spines dark brown, the two nearest the head being longest. Feeds on *Viola canina* from the end of May to the middle of June.

“The *pupa* is very beautifully decorated with shiny metallic golden-green spots.” (*Lang, l. c.*)

Except that the specimens are generally larger and the female always darker, there is no important difference between the Japanese form (*paphioides*, Butler) and typical European specimens.

So far as I am aware the var. *valesina* does not occur in Japan, but in China this variety of the female seems to be the dominant form. The typical form of the female also occurs in China, together with intergrades between

the type and *valesina*. Staudinger (Rom. sur Lép. vi. p. 196) records *valesina* from Askold.

Plate XXIII. fig. 2 represents a remarkable aberration of the female, taken by a native collector at Chang-yang, Central China, in July 1889.

Widely distributed throughout China, Japan, Corea, and Europe. It also occurs in Amurland, and M. Oberthür has recorded a male specimen from the Isle of Askold, which he says does not differ from specimens received from Kiang-si in China.

A very complete life-history of this species will be found in Buckler's 'Larvæ of British Butterflies.'

### **Argynnis anadyomene.** (Plate XXIII. fig. 1 ab. ♂.)

*Argynnis anadyomene*, Felder, Wien. ent. Mon. vi. p. 25 (1861); Lang, Butt. Eur. p. 221 (1884); Pryer, Rhop. Nihon. p. 28, pl. viii. fig. 2 (1889).

*Argynnis ella*, Bremer, Lep. Ost-Sib. p. 94, pl. viii. fig. 1 (1864).

*Argynnis midas*, Butler, Journ. Linn. Soc., Zool. ix. p. 53 (1866).

"Alis supra fulvis, maculis inordinate digestis pone discum, serie externa maculari, altera marginali maculis grossis rhombicis formata, nigris, anticis falcatis, figuris cellularibus nigris, posticis subtus aëno-virescentibus, margine costali, striga flexuosa pone discum punctisque quatuor exterioribus argenteis, maculis submarginalibus obsolete griseo-lilascensibus. ♂." (Felder, l. c.)

*A. midas*, Butler.—"Alæ anticæ costa convexa, apice rotundato anguloque anali acuto: supra maculis ut in *A. paphia* dispositis, venis autem excepe medianam tertiam nec fuscis. Alæ posticæ quadratæ, area apicali maculis ut in *A. paphia* dispositis sed majoribus; cella maculis sex terminata in triangulo positis.

"Alæ anticæ subtus pallidiores, cella maculisque ut in *A. paphia*, area apicali maculis olivaceis obscurissimis. Alæ posticæ nitentes, ochreæ, pallidæ, fasciis maculisque olivaceis variæ, fascia una media indistincta argentea lunulata punctisque nonnullis argenteis inter venas positis. Corpus pallidum ochreo-album.

"Alar. exp. unc.  $2\frac{5}{8}$ ." (Butler, l. c.)

Costa of primaries convex; outer margin deeply concave.

*Male*. Fulvous, with some long black scales on the first median nervule only of primaries; black spots arranged as in *A. laodice* but larger, especially on the outer margins. On the secondaries the spots forming series beyond the cell are more widely separated, and the spot at apex of cell is often triangular in shape. Underside: primaries buff, with discal markings as above, but the marginal area is usually immaculate: secondaries greenish buff, with some indistinct transverse central lines; the outer half of the wing limited by a wavy lilacine band, and traversed by some bands of the same colour, below a broad white crescent on costa there is a curved series of white points.

*Female*. Similar to the male, but generally duller in colour; apices of primaries clouded with black on upper surface, with a white spot; the basal half of secondaries is tinged with greenish: on the under surface of primaries the apical area is greenish, clouded with lilacine,

and bears a white spot as above; secondaries rather greener than in the male, and the whole surface is glossed with lilacine.

Expanse, ♂ 73-82 millim., ♀ 84-90 millim.

Among the very large number of *A. anadyomene* I received from Changyang are three aberrations which, as this species is usually so constant in pattern, it may be well to refer to. In two of these specimens, both males, one of which is figured, the black spots forming the central series on primaries are very large, the upper three confluent and the lower three only separated from each other by the nervules; each spot of the 2nd series is united with its fellow of the 3rd series, those of the marginal series are dilated inwards, and in one example all the spots at inner angle are confluent, forming an irregular blotch. On the secondaries the central series of spots forms a broad band interrupted by the nervules; the spots of 2nd and 3rd series are confluent as on primaries and the upper three spots of marginal series project inwards along the nervules almost to the middle of the wing, whilst the lower three are diamond-shaped. A third specimen, a female, is dingy pale fulvous, tinged with greenish, with black markings as in the type: on the secondaries the upper two spots are absent; those of second and third series are united in pairs, forming a transverse row of longitudinal bars, the third bar united with the discoidal spot and the fourth and fifth contracted in the middle.

In two females the secondaries have a large greenish-white irregular shaped patch on the central area, but this is larger on the right wing than on the left.

Common throughout Northern China, Japan, Corea, and occurs also in Amurland, where it is scarce.

### **Argynnis sagana.**

*Argynnis sagana*, Doubl. Hew. Gen. Diurn. Lep. pl. xxiv. fig. 1 (1847); Lang, Butt.

Eur. p. 222 (1884); Pryer, Rhop. Nihon. p. 28, pl. viii. fig. 3, ♂ (1889).

♀. *Damora paulina*, Nordmann, Bull. Mosc. 1851, ii. p. 440, pl. xi. figs. 1, 2.

“*Male* expands from 2.25 to 2.50 inches. Greatly resembles *paphia* above, but is somewhat larger and lighter; hind wings with only one black band between the base and the central row of spots. The bases are not dusky. Underside almost as in *laodice*, but the fore wings are tipped with purplish brown. The basal half of the hind wings is light brown, without the yellow tinge seen in *laodice*: the outer half is very much as in that species, only it has faint silvery markings as in *paphia*.

“*Female* expands from 2.25 to 2.75 inches. Dull greenish grey: fore wings spotted with black, with two large central white spots, and a short band of similar ones on the costa; there is a

white spot near the apex, and several along the hind margin. Hind wings with a central white band, outside which is a double row of black spots, and outside these a row of white ones. Underside: fore wings green, black, and white; hind wings green, with silvery markings." (*Lang, l. c.*)

Common and widely distributed in China and throughout Japan and Corea. It also occurs in Amurland, Eastern Siberia, and the Isle of Askold. The species is very constant in colour and markings, but varies somewhat in size. Some of the specimens from China attain a wing-expansion of 90 millim. in the male and 100 millim. in the female. The Amurland specimens are rather smaller than those from places further south.

**Argynnis zenobia.** (Plate XXIII. figs. 6 ♂, 5 ♀.)

*Argynnis zenobia*, Lecch, Entomologist, xxiii. p. 188 (1890); Oberthür, Etud. d'Entom. xvi. p. 7, pl. i. fig. 1, ♂ (1892).

*Argynnis penelope*, Staudinger, Iris zu Dresden, iv. p. 339 (1891).

*Male.* Fulvous, with black markings as in *A. childreni*, Gray, but the outer margin of secondaries is without the bluish tinge of that species, and the sinuses are not nearly so deep. On the under surface of primaries there is not the least tinge of red of any shade; the silvery lines at apex are sinuate and enclose three black spots, the upper one more distinct than the other two; on the secondaries there is more blue in the composition of the greenish ground-colour; the basal and discal lines are very similar to these characters in *A. childreni*; the central band is sinuous and interrupted at the end of the cell, where there is a large black dot; marginal and submarginal silvery lines are more indented, and towards costa the opposing angles of these lines meet and form rings; before the submarginal is a series of black spots, each with a centre slightly paler than the ground-colour.

*Female.* Rather paler than the male; base of inner margin of all the wings suffused with greenish; there are some spots and a transverse line terminating in a large subquadrate spot in cell of secondaries.

Antennæ of the male brown, club black with fulvous apex; of the female, as in same sex of *A. childreni*.

Expanse, ♂ 84 millim., ♀ 87 millim.

In size and in the ground-colour of upper surface this species closely resembles my specimens of *A. childreni* from N.W. India, but they are much smaller and paler than my examples of that species from N.W. China; these last measure from 94 to 110 millim.

Several specimens of each sex were captured by my collectors at Ta-chien-lu in July. M. Grun-Grshimailo met with this species in North-western Thibet. Staudinger received a few male specimens from the district north of Peking. Dörries also obtained it in the Sutschan district of Amurland in July and mentions that it was very scarce.

**Argynnis childreni.**

*Argynnis childreni*, Gray, Zool. Misc. i. p. 33 (1831); Lep. Ins. Nep. p. 11, pl. xi. ♂ (1846); de Nicéville, Butt. Ind. ii. p. 132 (1886).

*Argynnis sakontala*, Kollar, Hügel's Kaschmir, iv. pt. ii. p. 439, pl. xii. ♂ & ♀ (1848); Moore, Anderson's Anat. & Zool. Researches, p. 924 (1878).

“Wings fulvous, spotted with black; the anal half of the posterior margin of the hind wing tinged with blue. Underside of the fore wing with the basal portion crimson, spotted with black, an oblique medial band, which extends along the margin to the posterior angle, and the apex pale green with two short white lines. Hind wing greenish bronze, with oblique silvery white bands, narrowly margined with blue on each side.” (*Gray, L. I. N.*)

*Female* differs from the male in its larger size, duller coloration, and broader blue border to the secondaries.

Expanse (Chinese specimens), ♂ 94–100 millim., ♀ 100–110 millim.

Occurs from the North-west Himalayas across China to Ningpo, at various elevations up to 10,000 feet. So far the species has not been met with in Japan or Corea, but it is not uncommon at Chia-ting-fu and Wa-shan in Western China and at Chang-yang and Ichang in Central China. It frequents grassy slopes in the neighbourhood of woods, but only a few specimens are seen together at any one time and place.

Chinese specimens are finer than any that I have seen from India.

**Argynnis niphe.**

*Papilio niphe*, Linnæus, Syst. Nat. xii. p. 785 (1767); Drury, Ill. Exot. Ent. i. pl. vi. fig. 1, ♀ (1770); Cramer, Pap. Exot. i. pl. xiv. figs. D, E, ♂; B, C, ♀ (1775).

*Argynnis niphe*, Godart, Enc. Méth. ix. p. 261 (1819); Kollar, Hügel's Kaschmir, iv. pt. ii. p. 440, pl. xiii. figs. 1, 2 ♂ (1848); de Nicéville, Butt. Ind. ii. p. 131 (1886); Pryer, Rhop. Nihon. p. 28, pl. vii. figs. 8 *a*, 8 *b* (1889).

*Acidalia niphe*, Hübner, Verz. bek. Schmett. p. 31 (1816); Moore, Lep. Ceyl. i. p. 60, pl. xxxi. figs. 2 ♂, 2 *a* ♀, 2 *b*, larva and pupa (1881).

“*Male*. Upperside bright dark ochreous. Fore wing with black discoidal marks, a transverse discal zigzag series of six large spots, two submarginal rows of slightly smaller spots, and a marginal dentate line. Hind wing with slender black discoidal marks and transverse discal spots, a submarginal inner row of small spots and outer row of broad conical spots bordered towards the anal angle by a blue line; a marginal dentate line bordered by a blue line. Female brownish ochreous on basal area; markings broader; apical area of fore wing with blue-black interspaces and obliquely crossed by a white band, the spots also bordered by blue. Underside: fore wing red on basal area, pale ochreous and greenish at apex; male with two apical series of white spots; female as above; other markings as on upperside. Hind wing greenish ochreous brown, crossed by three black zigzag lines and a submarginal

line broadly bordered by silvery white ; a discal row of spots centred with silvery white." (Moore, l. c.)

*Larva*. "Head and legs black, body black, this colour, however, almost obscured by the orange-tawny markings. A broad orange-tawny dorsal stripe. Four straight horizontal simple black spines on head; spines on pectoral segments black; on abdominal segments pink, tipped with black; on caudal segments pink, faintly black-tipped. *Pupa*: Head and wing-cases pale Indian red; ten pale metallic spots on back; abdomen dark pink; spines faintly black-tipped." (*Young*): "The head ends in two well separated blunt points; there are a pair of spines anteriorly, another pair in the middle, and a third smallest pair posteriorly on the thorax, the latter being hunched and keeled, on the abdominal segments there are eight pairs of spines, the third anterior pair the largest." (*de Nicéville*, l. c.)

The following is a description of a larva of *A. niphe* which I took at Kagoshima, in the province of Satsuma, May 10th, 1886:—

Length  $1\frac{1}{2}$  inch. Ground-colour of body, head, and legs velvety black; dorsal stripe deep orange; abdominal legs externally tipped with a brownish-orange spot; spines branched, four on each of the first three segments, six on each of the remainder, with the exception of the anal segment, which has only four; the two dorsal spines of the second segment point forward; spines on the first three segments and the dorsal pair of the fourth segment black, the remainder are of a bright dark red, tipped with black; on each side of the body, from the fifth segment onwards, is an irregular network of faint pale markings. Feeds on a species of *Viola*.

*Pupa*. Light brown, with darker markings, having two spines on the under surface of each abdominal segment; the thoracic segments have each two bright gold spots on the under surface; the head terminates in two short horny projections. Remains ten days to a fortnight in this stage.

Under the name of *Argynnis castetsi*, M. Oberthür (Etud. d'Entom. xv. pl. i. fig. 1) figures a curious variety of the female of *A. niphe* from Trichinopoly. This remarkable specimen, which was previously recorded (Bull. Soc. Ent. Fr. 1889, p. ccxxxiv), has exactly the male coloration and is entirely without any of the characteristic markings of the female. Mr. Elwes (Trans. Ent. Soc. Lond. 1889, p. 563) says that the Australian form (*inconspans*, Butler) is smaller, duller in colour, and the female is without the white band. In Western China *A. niphe* is abundant at Omei-shan, Wa-shan, Moupin, Chia-kou-ho, and Chia-ting-fu; also at Chang-yang and Ichang, Central China. It is recorded from Ningpo. Pryer says that it is rare at Yokohama, but common in South Japan from March to July. I found the species in some numbers at Nagasaki and in the provinces of Higo and Satsuma in May. On one occasion I found the larva, pupa, and imago all together in the same place.

According to de Nicéville it occurs throughout the Himalayas, in Bombay,



the Nilgiris, Travancore, Ceylon, Sumatra, Java, Formosa, and North Australia.

Genus TIMELÆA.

*Timelæa*, Lucas, Ann. Soc. Ent. France, 1883, p. xxxv.

“Yeux ovalaires, saillants, envahissant les parties latérales de la tête: celle-ci petite, étroite. Palpes labiaux grêles, non velus, couverts de poils squammiformes; dernier article allongé, assez aigu. Antennes grêles, plus allongées que le corps, terminées en massue fusiforme, allongée-ovoïde, comprimée, creusée longitudinalement en cuiller en dessous. Thorax peu robuste. Ailés grêles, dentelées, à sommet, à bords antérieur, extérieur et postérieur arrondis. Pattes grêles dans les deux sexes, non poilues. Abdomen grêle, plus court que les ailes de la seconde paire, très légèrement courbé.” (*Lucas, l. c.*)

***Timelæa maculata.*** (Plate XXIII. fig. 7, ♂.)

*Melitæa* (?) *maculata*, Bremer & Grey, Schmett. N. China's, p. 7, pl. i. fig. 3 (1853).

*Argynnis maculata*, Kirby, Cat. Diurn. Lep. p. 163.

*Melitæa maculata*, Elwes, Proc. Zool. Soc. Lond. 1881, p. 900.

*Timelæa maculata*, Lucas, Ann. Soc. Ent. Fr. 1883, p. xxxv.

*Argynnis leopardina*, Lucas, Ann. Soc. Ent. Fr. 1866, p. 221, pl. iii. figs. 3, 3*b*.

Pale fulvous, marked with black. Primaries have four spots above the discoidal cell, two in the cell and a short streak from the base in the submedian interspace; the inner central macular band is sharply indented in first median interspace; the outer central band is composed of five large oblong spots and one minute round one, the latter placed in the second median interspace; submarginal band composed of seven spots, of which the third and sixth are the smallest, marginal series of seven spots placed on the nervules; there is a black streak along the middle of the inner margin. Secondaries have four spots in the discoidal cell and four spots along the paler abdominal margin; the inner central band is twice angulated, and the outer, composed of seven square spots, curved; submarginal band of seven spots, the seventh double; marginal series of spots as on primaries. Fringes paler than ground-colour, preceded by a black line and chequered with black at the tips of the nervules. Underside of primaries rather paler than above, but with the same black markings; there are some white markings on the costa between the central bands and between the outer central and submarginal bands, and in some specimens indications of a whitish macular band between the two central black ones: of secondaries whitish, with broad pale fulvous border to outer margin and a broad dash of same colour from the middle of abdominal margin; the black markings as above, but in addition there are two spots towards base of costa.

The *female* has the outer margin of primaries rounder, but does not otherwise differ from the male.

Expanse, ♂ 60–62 millim., ♀ 54–60 millim.

Occurs at Kiukiang, Chang-yang, and Ichang in Central China, and at Chia-ting-fu in Western China. Bremer's types were from Peking, and I believe that a specimen was taken by Mr. W. B. Pryer in the Snowy Valley, near Ningpo.

**Timelæa albescens.** (Plate XXIII. fig. 9, ♂.)

*Argynnis maculata*, var. *albescens*, Oberthür, Etud. d'Entom. xi. p. 18 (1886).

Very similar to *T. maculata*, Brem., but on the upper surface of primaries there are only two black spots above the discal cell, and the black streak from the base in the submedian interspace is much shorter. The secondaries have the basal two thirds whitish, the discoidal cell slightly tinged with fulvous in some specimens; the abdominal margin is unspotted; the two lower spots in the cell unite with the inner central band, and the two upper ones in conjunction with the second one of the band form a straight series. Underside of all the wings as above.

Expanse ♂ 58-70 millim.

I received six male specimens of this species from Wa-ssu-kow, where they were taken by a native collector in June. When M. Oberthür described this as a variety of *T. maculata* he had seen but the one example sent him by M. l'Abbé David, who captured the specimen at Châpa, and only two of *T. maculata*. I find the differences between these two insects, as referred to above, are very constant, and in addition it may be mentioned that the undersides of the antennæ of *T. albescens* are far less distinctly marked with white.

**Timelæa nana**, sp. nov. (Plate XXIII. fig. 8, ♀.)

Brownish black, banded with pale fulvous. Primaries have the discoidal cell crossed by two pale fulvous bars and closed by a third; the central band is narrow and much angulated, preceded by a white spot on costa; the submarginal band is lunulated and commences as a white dash from the costa; the median nervure is pale fulvous, as also is the basal half of submedian, and there is a dash of the same colour from one nervure to the other. Secondaries have some obscure fulvous transverse markings on the basal area; central band narrow and angulated; submarginal band narrow and lunulated towards costa; neuration brownish grey, and there is a marginal line of the same colour on all the wings, but broadest on the secondaries. Fringes black, tipped between the nervules with white. Under surface of primaries ochreous, tinged with fulvous; there are three black spots in the discoidal cell, and beyond these two central bands composed of black spots are placed as in *T. maculata*; the submarginal band and marginal series of black spots are also very similar to the same characters in *maculata*: secondaries pale yellowish white; there are three black spots in the cell with one below the first and one above the third; the inner central black macular band is very irregular, the outer, composed of larger spots, is curved; the submarginal band is formed of large oblong black spots. All the wings have a black marginal line, and the fringes are white, chequered with black at the tips of the nervules.

*Female.* Similar to the male, but the transverse bands are paler and the central one rather wider. Expanse 42-46 millim.

This species appears to occur only in Western China. I have received it from Moupin, Wa-shan, Omei-shan, Chia-kou-ho, and Huang-mu-chang.

## Genus CYRESTIS.

*Cyrestis*, Boisduval, Voy. Astrol., Lep. p. 117 (1832); Westwood, Gen. Diurn. Lep. ii. p. 260 (1850); de Nicéville, Butt. Ind. ii. p. 248 (1886).

“BODY small, slender; wings large and delicate.

“HEAD small, broader than the neck, but narrower than the middle of the thorax, strongly tufted in front.

“Eyes very prominent, naked.

“Antennæ not half the length of the fore wings, very slender, and terminated by an elongated, very gradually formed, slender club.

“Labial palpi long, slender, directed upwards to about two thirds of the height of the eyes, and protracted to nearly twice the length of the head; somewhat cylindrical, scaly; basal joint clothed beneath with rather short woolly hairs; second joint also similarly clothed on the upperside, the joints not being apparent unless denuded of scales; terminal joint nearly as long as the second, slender.

“THORAX squamose, slightly hirsute behind; collar narrow and distinct.

“Fore wings large, subtriangular. Fore margin slightly rounded. Apical margin somewhat truncate or slightly rounded, five sixths of the length of the fore margin, sinuated along its greater part; apical angle rather acute; anal angle emarginate and somewhat lobed. Inner margin not above two thirds of the length of the anterior, rather rounded outwardly towards the base, but emarginate beyond the middle. Costal vein slender, extending to the middle of the fore margin. Subcostal vein rather thicker, its first branch arising at the distance of one third of the length of the wing from its base; second branch arising at a very little distance beyond the first, close to the anterior extremity of the discoidal cell; third branch arising at about two thirds of the length of the wing; fourth arising halfway between the base of the third and the tip of the wing, to which it extends, the terminal division of the vein itself being rather deflexed. Upper discocellular very short and longitudinal, forming the base of the upper discoidal vein; middle and lower discocellular veins forming a straight transverse termination to the discoidal cell, which forms a triangle occupying about one third of the length of the wing, the lower discocellular being about three times the length of the middle one, very slender, sometimes almost or entirely obsolete, and united with the median vein exactly at the base of its third branch, which is regularly arched.

“Hind wings somewhat hexagonal, elongated. The costal margin nearly straight for more than half its length, when it is emarginate to the outer angle. Outer margin sinuated from the outer angle to the extremity of the third branch of the median vein, where the wing is produced into a short, narrow, curved, and obtuse tail; thence to the anal angle the wing appears truncate, the anal angle itself being developed into a short, broad, spatulated tail. Precostal vein forming a slender, curved, simple spur; costal nervure much curved along its basal portion, then straight to the commencement of the emargination at the outer angle of the wing; subcostal branched at about one fourth of the length of the wing from the base, emitting the upper discocellular (close to the origin of its branch), which forms the base of the discoidal vein; lower discocellular arising at the same distance from the base of the upper discocellular as exists between the base of the subcostal vein and its branch;

lower discocellular straight, very thin, and united to the median vein at the base of its third branch.

“*Fore legs* of the male very slender, short, and pectoral; the femur as long as the remainder of the limb, curved outwardly about the middle, and clothed beneath with long silky hairs; tibia very slender, scaly, clothed within with short hairs, as is also the tarsus, which is not above one fifth of the length of the tibia, very slender, simple, and exarticulate: of the female considerably longer than those of the male, slender and pectoral; femur thickly clothed beneath with short silky hairs; tibia slender, gradually thickened towards the tip, finely scaly; tarsus gradually thickened, short, with several pairs of minute spines near the tip beneath, indicating the very short articulations, the three terminal ones being extremely short, last joint without any claws or their appendages.

“*Hind legs* moderately long and slender, scaly; tibia with a few very minute spines, arranged wide apart in two rows, tibial spurs very short; tarsi equal in length to the tibia, with several rows of minute spines on the under surface, basal joint about half the length of the tarsus, terminal joint furnished with long setæ on its upperside at the tip; claws small, much curved; paronychia bilacinated, finely setose, the outer lacinia curved, broader, and obtuse, the inner lacinia small, narrow, slender, and rather pointed.

“*ABDOMEN* small and slender, not above one third of the length of the hind wing.” (*Westwood, l. c.*)

### **Cyrestis thyodamas.**

*Cyrestis thyodamas*, Boisduval, Cuvier's Règne Animal, Insectes, ii. pl. cxxxviii. fig. 4 (1836); Doubleday, Hewitson, Gen. Diurn. Lep. ii. p. 261, pl. xxxii. fig. 3 (1850); de Nicéville, Butt. Ind. ii. p. 251 (1886); Pryer, Rhop. Nihon. p. 23, pl. v. fig. 14 (1887).

*Amathusia ganescha*, Kollar, Hügel's Kaschmir, iv. pt. 2, p. 430, pl. vii. figs. 3, 4 (1848).

*Cyrestis ganescha*, Butler, Ann. & Mag. Nat. Hist. (5) xvi. p. 308 (1885).

“*Male and female.* Upperside: both wings of different shades, varying from pure white to rich ochreous. Fore wing with the costal area, especially basally, more or less infuscated, crossed by numerous fine black lines—first a longitudinal one at the base of the cell, second an oblique one across the cell from the costa to the median nervure, the third crossing the cell obliquely continued to the submedian nervure of the hind wing, the fourth outwardly much arched, confined to the cell, the fifth and sixth enclosing the discocellulars, the seventh, eighth, and ninth discal, continued across the hind wing, the eighth with a blackish smudge placed inwardly against it on the costa, and often with a more or less distinct, diffused, powdery, black, rounded spot beyond it in the lower discoidal interspace, the ninth the most prominent of all, marked with steel-blue from the second median nervule of the fore wing to the anal angle of the hind wing, followed by an irregular series of annular ochreous spots, more or less obsolescent in the middle of the wing, most prominent at the inner angle, where they are richer coloured; the margin marked with four more fine black lines, the three outer ones placed upon a more or less decreasing fuscous ground. Hind wing with the discocellulars marked with a fine black line: the tail black, tipped and irrorated with white; the anal lobe and anal angle marbled with numerous irregular, ferruginous, steel-blue and white spots; the abdominal margin more or less powdered with black. Underside paler, marked much as

above, the ferruginous markings at the anal angle and lobe of the hind wing more distinct, the latter with a prominent black spot in the middle." (*de Nicéville*.)

This species has been recorded by Pryer from Yamato and the Province of Satsuma, Japan; it is also common in the Loochoo Islands. In Western China it occurs plentifully throughout the summer. Both the white and ochreous forms are found in about equal numbers, in the same localities and at the same times, and are represented by both sexes, although the females seem to be much scarcer than the males.

I have examined large numbers of Chinese specimens, but none of them appeared to differ in any way from Indian examples of the same species.

According to de Nicéville, the Indian distribution of *C. thyodamas* is as follows:—Himalayas, Assam, Khasi Hills, Cachar, Upper Tenasserim, Andaman Isles, Bombay, and South India.

*C. thyodamas* was accidentally included in the distribution table of my paper on the Rhopalocera of Japan and Corea as occurring in the latter country.

In his remarks on this species (*Rom. sur Lép. vi. p. 99*) Dr. Staudinger seems to be very positive that it does not occur out of India.

### Genus PYRAMEIS.

*Pyrameis*, Hübner, Verz. bek. Schmett. p. 33 (1816); Doubleday, Gen. Diurn. Lep. i. p. 202 (1849); de Nicéville, Butt. Ind. ii. p. 225 (1886).

“HEAD of moderate width, hairy.

“*Eyes* nearly round, hairy.

“*Palpi* porrect, slightly ascending, convergent, projecting fully half their length beyond the forehead, scaly, slightly hairy in front, more so on the sides and upper surface of the second joint. First joint subcylindric, much curved; second joint more than three times as long as the first, subcylindric, stouter a little beyond the middle, then narrowed to the apex; third joint less than half the length of the second, elongate-conic, the apex rather obtuse.

“*Antennæ* about three fourths the length of the body, rather slender, terminating in a short, somewhat pyriform club, of which the terminal joints taper to a point.

“THORAX oval, moderately stout, hairy; *abdomen* stout, about half the length of the inner margin of the hind wing.

“*Fore wing* subtriangular, the apex more or less truncate; the costal margin but little curved; outer margin but three fourths the length of the costal, sinuate, emarginate; inner margin slightly longer than the outer, straight, or slightly emarginate. Costal nervure stout, extending to the middle of the costa; subcostal nervure slender, lying close to the costal;

its first and second branches arising near to one another, and but little before the end of the cell, the third arising at about two thirds of the distance from the base to the apex, terminating at the apex, the fourth rather nearer to the origin of the third than to the outer margin; upper and middle discocellular nervules all but wanting; lower discocellular very slender, sometimes nearly atrophied, arising from the second discoidal nervule at a short distance from its origin, nearly straight, directed outwards, anastomosing with the third median nervule at some distance from its origin, at a point where it is slightly angulated.

“*Hind wing* somewhat obovate, the inner margin the longest; the costal and outer margins of about equal length, the former rounded, the latter more or less sinuate and subdentate. Præcostal nervure simple or slightly bifid, the outer branch nearly atrophied; discoidal nervule arising from the second subcostal soon after its origin; lower discocellular nervule very slender, anastomosing with the median nervure opposite to the origin of its second branch.

“*Fore legs* of the male densely hairy; the tibia a little shorter than the femur; the tarsus than the tibia; tibia subcylindric, unarmed; tarsus subcylindric, tapering towards the apex, which is obtusely conical: of the female with the femur, tibia, and base of tarsus densely hairy, the proportion of these parts as in the males; tibia subcylindric, sparingly spiny within; tarsus with the first and second joints spiny below, the latter rather more than one fifth the length of the former; both armed at the apex, as are the two following joints, with a stout joint on each side, covered by a more or less distinct tuft of hairs at the base of the following joint; third joint little more than half the length of the second, transverse; fourth joint shorter than the third, transverse, obliquely truncate at the apex; fifth joint short, transverse, about equal in length to the fourth.

“*Middle and hind legs* moderately stout; the femur in the former longer than in the latter, equal to the tibia; tibiæ with two latero-internal rows of spines, and lateral less regular series; spurs stout, elongate; tarsi spiny above, laterally, and, except the fifth joint, below; the spines of the lower surface stout, long, arranged in two nearly regular series; middle tarsi with the first joint about three times the length of the second; the posterior tarsi with the first joint little more than double the length of the second; third joint considerably shorter than the second; the fourth than the third; fifth about equal to the second; claws rather stout, curved, grooved below. Paronychia very hairy, bilacinate; the outer lacinia strap-shaped, as long as the claw; the inner short, subtriangular, or with the inner lacinia rudimentary; the outer elongate, triangular, slender. Pulvillus jointed, shorter than the claws, or merely rudimentary.

· *LARVA* cylindric; all the segments, except the head and prothoracic segment, armed with verticillate spines. Coloration brown or olive, tending more or less to green, with an interrupted pale longitudinal band on each side. In their habits they are different from *Vanessa*, being always solitary, drawing together the sides of a leaf with silken threads, and thus forming a cylindrical dwelling. *Pupa* more or less angular and tuberculate, the head rather obtusely bifid. Coloration some shade of brown, green, or olive, more or less ornamented with golden spots.

· *Pyrameis* differs from *Vanessa* in having the wings less angular; the palpi less hairy, and of somewhat different form; the club of the antennæ rather more pointed; and in other less obvious characters.” (*Doubleday, l. c.*)

### **Pyrameis cardui.**

- Papilio cardui*, Linnæus, Syst. Nat. x. p. 475 (1758); Esper, Schmett. i. pt. 1, pl. x. fig. 3 (1777); Hübner, Eur. Schmett. i. figs. 73, 74 (1793?).
- Vanessa cardui*, Hübner, Verz. bek. Schmett. p. 33 (1816); Lang, Butt. Eur. p. 17, pl. xlii. fig. 2 (1884); Pryer, Rhop. Nihon. p. 26, pl. vii. fig. 2 (1889).
- Pyrameis cardui*, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 138, pl. v. fig. 3 (larva), 3 a (pupa) (1857); Lep. Ceyl. i. p. 50, pl. xxvii. figs. 1 (imago), 1 a (larva and pupa) (1881); de Nicéville, Butt. Ind. ii. p. 227 (1886).
- Papilio carduelis*, Cramer, Pap. Exot. i. pl. xxvi. figs. E, F (1775).

- “*Male and female.* Upperside: both wings ochreous red. Fore wing with the basal area ochreous brown; an oblique irregular-shaped angular band, the apical area and exterior border black; before the apex is a short white oblique band and a curved series of four spots; a pale marginal line; interspace at end of cell whitish in the female. Hind wing with the basal area, a confluent discal fascia, and the costal border ochreous brown; a transverse discal row of five black spots, each spot with slightly paler outer ring, a submarginal row of lunular spots, and a marginal row of larger spots.” (*Moore, l. c.*) “Underside: fore wing much as above, but the basal area more decidedly red and the apex and outer margin ochreous, some additional black spots in the cell placed just below the subcostal nervure. Hind wing ochreous, richly spotted and marbled with deeper shades of ochreous and brown. An oval spot across the middle of the cell, the five round discal spots as above, but developed into ocelli, the second and fifth the largest, with blue centres and black outer ring.” (*de Nicéville, l. c.*)
- “*Larva* blackish brown, with a longitudinal pale interrupted line on each side; the segments armed with short branched spines. Feeds on *Artemesia*.”
- “*Pupa* tuberculate, head bluntly cleft, pale ochreous or brown, more or less spotted with yellow.” (*Moore, l. c.*)

Newman ('British Butterflies,' p. 65) describes the larva as follows:—

- “The colour of the head is dull black; the dorsal surface of the body is black; the spines paler, with black tips and branches; the hairs are white; the skinfold separating the dorsal and ventral surface is yellow; the ventral surface, legs, and claspers are pitchy red; the spiracles above the skinfold are pale in the middle, then surrounded with black, then again with paler. In many individuals the dorsal surface is irrorated with yellowish-white dots, which are more conspicuously collected in a double series along the back, interrupted by a narrow medio-dorsal stripe intensely black; in these examples the bulbous base of each spine is pitchy red.”

The larva in Europe feeds on the common field-thistle and other species of *Carduus*, also on *Malva sylvestris*, *Onopordon acanthium*, and flowers of *Echium vulgare*.

A more detailed description of the earlier stages of *P. cardui* will be found in Buckler's 'Larvæ of British Butterflies,' i. pp. 49, 174.

A cosmopolitan insect. It is common throughout the region dealt with in the present work.

### **Pyrameis indica.**

*Papilio atalanta indica*, Herbst, *Naturs. Schmett.* vii. p. 171, pl. clxxx. figs. 1, 2 (1794).

*Pyrameis indica*, Moore, *Lep. Ceyl.* i. p. 50, pl. xxvii. fig. 2 (1881); de Nicéville, *Butt.*

*Ind.* ii. p. 229, pl. xviii. fig. 74, ♀ (1886).

*Pyrameis calliroë*, Hübner, *Verz. bek. Schmett.* p. 33 (1816).

*Pyrameis callirhoë*, Horsfield & Moore, *Cat. Lep. Mus. E. I. C.* p. 138 (1857).

*Vanessa callirhoë*, Pryer, *Rhop. Nihon.* p. 126, pl. vii. fig. 3 (1889).

“*Male and female.* Upperside: fore wing black, with a broad medial oblique irregular red band, the lower portion of which is traversed by three irregular-shaped black spots; basal area and posterior margin golden brown; an oblique subapical series of white quadrate spots, and an outer series of small dentate spots. Hind wing golden brown, with a marginal red band, bordered by black spots and traversed by a row of black spots and outer lunular line.” (*Moore, l. c.*) “Underside: fore wing with the costa basally striated with black, two black spots at the base of the cell divided by a white line, a short narrow blue line beyond the end of the cell, the apex ochreous, bearing two obscure ocelli divided by the upper discoidal nervule, other markings much as above. Hind wing brown, beautifully marked, marbled, and irrorated with white, grey, darker brown, black, &c., the veins white on the basal half of the wing. A conspicuous oval white ring-spot in the middle of the cell, with a larger one enclosing a black space beyond; a submarginal series of five cordiform spots, the two divided by the third median nervule with blue centres, the margin marked with a blue irregular line and other grey, black, and ochreous ill-defined bands. Cilia throughout white, spotted with black at the ends of the nervules.” (*de Nicéville, l. c.*)

The larva closely resembles that of *P. atalanta*, and feeds on nettles in exactly the same way.

This is one of the commonest butterflies in China, Japan, and Corea, and is observed on the wing throughout the year. It also occurs in Amurland. According to de Nicéville, this species is found in India wherever the nettle, upon which the larva feeds, occurs. In the Canary Isles and Madeira *P. indica* is represented by the form *vulcanica*, Godart (*Encyc. Méth.* ix. p. 320), which has also been recorded from Portugal and Andalusia.

*P. atalanta* also occurs in the Canaries, and Alphéraky (*Rom. sur Lép.* v. p. 218) states that *vulcanica* is probably only a form of that species. I cannot, however, concur in this opinion, as out of hundreds of specimens of *vulcanica* and a few of *P. atalanta* bred by myself there was no approach to a form intermediate between the two species. As *P. atalanta* is very scarce in the habitat of *vulcanica* I am inclined to think that it is a comparatively modern introduction to the fauna of the Canaries and Madeira.



## Genus VANESSA.

*Vanessa*, Fabricius, Illiger's Magazin, vi. p. 281 (1807); de Nicéville, Butt. Ind. ii. p. 229 (1886).

*Grapta* and *Vanessa*, Doubleday, Gen. Diurn. Lep. i. pp. 195-198 (1848).

“HEAD of moderate width, densely clothed with long hairs.

“*Eyes* more or less oval, densely hairy.

“*Palpi* porrect, ascending, projecting considerably beyond the forehead, scaly and densely hairy all round. First joint scarcely two fifths the length of the second, subcylindric, much curved; second joint more or less swollen beyond the middle, thence tapering to the apex, which is obliquely truncate; third joint fully two fifths the length of the second, slender, subcylindric, or nearly acicular, more or less pointed at the apex.

“*Antennæ* about three fourths the length of the body, with two distinct grooves below; the club rather short, gradually tapering at its origin; the last joint minute, pointed.

“THORAX moderately stout, clothed with long hairs; abdomen about two thirds the length of the inner margin of the hind wing.

“*Fore wing* subtriangular; the apex truncate; costal margin but little curved, sometimes deeply emarginate at the shoulder; outer margin about three fourths the length of the costa, sinuate, emarginate; inner margin nearly straight, slightly longer than the outer; costal nervure rather stout, extending about to the middle of the costa; subcostal nervure not much slenderer than the costal, and separated from it by a short interval; its first and second branches thrown off close together and but little before the end of the cell; the third arising at about two thirds of the distance from the base to the apex, and terminating close to the apex; the fourth rather nearer to the origin of the third than to the outer margin; upper discocellular nervule very short, all but wanting; middle discocellular likewise short; lower discocellular atrophied, or nearly so, its position indicated by a faint line, sometimes showing the rudiment of a nervule, which arises from the second discoidal nervule, not far from its origin, and runs obliquely downwards to the median nervule.

“*Hind wing* somewhat obovate; inner margin longest; costal and outer margins about equal, the former more or less rounded, the latter more or less sinuate, dentate, prolonged into a tooth or short tail at the termination of the third median nervule; precostal nervure simple; discoidal nervure arising from the second subcostal soon after its origin.

“*Fore legs* of the male with the femur and tibia about equal in length, the latter rather stouter than the former; tarsus of the same length as the tibia, subcylindric, or slightly tapering towards the apex, sometimes with one or two strangulations near the middle. Of the female, with the femur and tibia equal in length, the latter unarmed; tarsus about the same length as the tibia, first joint more than three times the length of the second, spiny below beyond the middle, this and the three following joints armed at the apex with a stout spine on each side, mostly covered by a tuft of hairs at the base of the next joint; second joint spiny below; third and fourth about one third the length of the second; the latter shorter than the former, very obliquely truncate at the apex; fifth joint short, transverse, sometimes scarcely visible from below.

“*Middle and hind legs* moderately stout; femora and tibiæ about equal, the latter spiny without and laterally within; the spurs long, robust; tarsi about as long as the tibiæ, spiny

laterally, and, except the fifth joint, below; the spines of the lower surface arranged in two nearly regular series; first joint about four times the length of the second, third and fourth each gradually shorter, fifth longer than the second; claws long, but little curved, grooved below; paronychialia with the inner lacinia wanting or very short, the outer as long as the claw and slender, but little hairy; pulvillus small, short.

“LARVA cylindric, the head and first thoracic segment unarmed, the rest armed with long spines, set with setæ in whorls. Pupa very angular and tuberculate; the head deeply bifid, of some shade of brown, sometimes pale green, often bearing brilliant golden spots.” (*Doubleday, l. c.*)

### **Vanessa limenitoides.**

*Vanessa limenitoides*, Oberthür, Etud. d'Entom. xiii. p. 39, pl. ix. fig. 96 (1890).

“La forme des ailes de cette intéressante nouveauté est analogue à celle de la *Vanessa indica*.

“Les ailes sont noires en dessus avec des taches blanc jaunâtre disposées comme suit: 1° aux supérieures, une tache arrondie dans la cellule; deux taches, l'une de même grosseur que celle de la cellule et l'inférieure plus grosse, également arrondies, au-dessous de la nervure médiane; une série de trois taches allongées extracellulaires, près du bord costal; six taches à peu près parallèles au bord subterminal et dont les deux premières sont d'un blanc plus pur; 2° aux inférieures, une large tache descendant du bord costal au bord anal, formant presque un triangle isocèle dont le bord extérieur forme la base; les côtés de ce triangle n'étant cependant pas rectilignes, mais un peu ondulés; enfin quelques points formant une série assez droite de quatre ou cinq entre la tache triangulaire et le bord externe.

“Le dessous diffère du dessus parce qu'un lavis olivâtre remplace le noir à l'apex des supérieures et sur toute la surface des inférieures; de plus, aux inférieures, la tache triangulaire blanche et le bord anal sont sillonnés de quelques traits grisâtres qu'on voit, du reste, transparaître en dessus; enfin quelques taches noires apparaissent près du bord costal dans et à l'extrémité de la cellule, dans l'espace subterminal et à l'extrémité des nervures le long du bord terminal. Tsé-kou (*R. P. Dubernard*).” (*Oberthür, l. c.*)

Black, with creamy-white markings. Primaries have a roundish spot towards the outer end of discoidal cell, sometimes preceded by a smaller indistinct one, the central band is represented by three spots near costa and two larger ones towards inner margin, the lower one intersected by the submedian nervure; submarginal series of six spots, the second placed out of line with the rest, thus causing the series to correspond with the outline of the outer margin. Secondaries have a broad central fascia intersected by the neuriation, and only separated from a large patch filling up the outer half of cell by the discocellulars and a blackish patch placed thereon; submarginal series of white spots small and placed in the nervular interspaces; abdominal fold whitish, suffused with dusky. Under surface similar to the upperside, but the apex of primaries is greyish, the costa edged with whitish, and there is a white cuneiform spot in the basal half of the cell: secondaries with the black ground-colour replaced by grey, and there are three black spots forming a curved series in the basal area.

Of this interesting species I have received but one specimen, which was taken in the neighbourhood of Ta-chien-lu. As its characters are not exactly those of a *Vanessa* it is probable that a new genus will have to be created for the reception of this insect.

**Vanessa io.**

*Papilio io*, Linnæus, Syst. Nat. x. p. 472 (1758); Esper, Schmett. i. pt. i. pl. v. fig. 2 (1777); Hübner, Eur. Schmett. i. figs. 77, 78 (1793?).

*Vanessa io*, Godart, Enc. Méth. ix. p. 309 (1819); Lang, Butt. Eur. p. 175, pl. xli. fig. 1 (1884); Pryer, Rhop. Nihon. p. 26, pl. vi. fig. 11 (1888).

“Expands from 1.75 to 2.75 inches. All the wings are dull red, with the hind margins brown. The fore wings have two black costal marks, external to which is a large eye-like spot composed of various colours, principally blue, and below this two small spots of light blue. The hind wings have a large blue and black eye surrounded by light brown. The underside is very dark brown, varied with nearly black lines.

“*Larva*. Black; with minute white spots and covered with black spines. Feeds on *Urtica dioica* from June to August.” (Lang, *l. c.*)

Buckler gives an extended account of the early stages of *Vanessa io* in ‘Larvæ of British Butterflies,’ i. p. 179. This species is not very common in Central Japan, where it is restricted to the mountains, but in Yesso and Corea it is plentiful. There is no difference between Japanese or Corean specimens and those from Europe. Abundant in Amurland and throughout Europe, and also found in Asia Minor. So far as known at present *V. io* does not occur in any part of China dealt with here; neither has it ever been recorded from Northern India.

**Vanessa canace.**

*Papilio canace*, Linnæus, Syst. Nat. xii. p. 779 (1767).

*Vanessa canace*, de Nicéville, Butt. Ind. ii. p. 231 (1886).

*Papilio charonia*, Drury, Ill. Exot. Ent. i. pl. xv. figs. 1, 2 (1770); Cramer, Pap. Exot. i. pl. xlvii. figs. A-C (1775).

*Vanessa charonia*, Godart, Enc. Méth. ix. p. 308 (1819); Pryer, Rhop. Nihon. p. 27, pl. vii. fig. 4 (1889).

*Vanessa glauconia*, Motschulsky, Etud. Entom. vi. p. 28 (1857).

“*Male*. Upperside: both wings indigo-blue, crossed by a broad discal paler blue band, which is bifurcated above the third median nervule in the fore wing, the outer portion ending in some small whitish spots on the costa, the band gradually increasing in width from the costa to the anal angle, and bearing a series of small black spots between the nervules (sometimes absent) in the hind wing; two fine marginal blue lines, often more or less obsolete. Fore wing with the costa more or less striated with bluish. Underside most beautifully variegated and striated with black, green, ochreous, pale violet, and ferruginous, crossed by a more or less prominent discal dark broad band having its inner edge indistinct, but its outer edge sharply defined with a highly irregular black line. Fore wing with a small ochreous spot at the outer lower end of the cell touching the median nervure, usually with two ochreous spots near the apex answering to the terminal whitish spots of the discal band above. Hind wing

with the outer end of the cell usually marked with a prominent ochreous spot, the black spots placed on the blue band above more or less present as obscure ocelli.

“*Female*. Usually larger than the male, markings similar, but the marginal fine blue lines usually obsolete, the angulations of the outer margins broader and larger.” (*de Nicéville, l. c.*)

Var. **glauconia**, Motschulsky. “*Figura Van. polychloræ et charoniæ*, sed color supra nigro-subfuscus, subtus fuscus nigro-variegatus, alis anticis supra: maculis anticis duabus albidis sublateralibus, ocelliformibus, postice tribus cæruleis; alis posticis supra: fascia obliqua, sublaterali, catenulata, antice posticeque abbreviata, cærulea, ocellis medio unipunctatis; alis anticis subtus: maculis anticis duabus albis, alis posticis subtus: medio puncto minutissimo albo. Exp. al. 21 l.” (*Motschulsky, l. c.*)

Common all over Japan and Corea. It is a variable species in the contour of the wings, width of the blue submarginal bands, and the size and colour of the costal spots, which may be either blue (*canace*) or white (*glauconia*); the blue submarginal band of the fore wing, which usually ceases at its junction with the larger costal spot, is in some specimens carried up as far as the apical spot, noticeably so in specimens-taken in the mountain districts of Central Japan in October.

Fixsen (*Rom. sur Léop. iii. p. 296*) says that the specimens from the Corea are nearer to Japanese specimens than to Amurland examples.

So far as I know the var. *glauconia* appears to be confined to Japan and the Loochoo Islands. In China the species is represented by the typical form only; it is widely distributed, and some of the specimens from Western and Central China are very large, expanding from 80–90 millim.

In India *V. canace* occurs throughout the Himalayas, and its range extends into Burma and Assam.

This insect is very partial to the gummy exudation from wild cherry and other trees. Its flight is rapid, but when disturbed it usually returns to the same place. Like *P. atalanta* and the species of *Vanessa*, it is fond of sitting on wet places on the roads.

### **Vanessa antiopa.**

*Papilio antiopa*, Linnæus, *Syst. Nat. x. p. 476* (1758); Esper, *Schmett. i. pt. i. pl. xii. fig. 2* (1777), *pl. xxix. fig. 2* (1778); Hübner, *Eur. Schmett. i. figs. 79, 80* (1793?).

*Vanessa antiopa*, Godart, *Enc. Méth. ix. p. 308* (1819); Lang, *Butt. Eur. p. 176, pl. xli. fig. 2* (1884); de Nicéville, *Butt. Ind. ii. p. 232* (1886); Pryer, *Rhop. Nihon. p. 26, pl. vii. fig. 1* (1889).

“*Male and female.* Upperside: both wings rich dark chestnut, the outer margin broadly and evenly white or pale straw-coloured, more or less densely striated with black; along the inner edge of this border is a black band, broader than the pale margin in the hind wing, narrower in the fore wing, bearing a series of rich shining blue oval spots between the veins, which become obsolete towards the anal angle of the hind wing. Fore wing with two short subcostal white or pale straw-coloured bars, the costa striated with the same colour. Underside: both wings with the outer border as above, but paler and more densely striated, all the rest of the wing black, densely striated with deeper black; sometimes with a more or less prominent ochreous spot at the lower end of the cell. Fore wing with the subcostal bars as above, but less distinct. Hind wing with a narrow black irregular discal line.” (*de Nicéville, l. c.*)

“*Larva.* Black, with white dots; from the fifth to the eleventh segments is a row of dorsal light red spots. The spines are black or dark brown; it feeds on *Salix alba*, sometimes on nettle or on birch, in the spring and early summer.” (*Lang, l. c.*)

For a more detailed description of this larva see Buckler's, ‘Larvæ of British Butterflies,’ i. pp. 52-54. I took this species at Hakodate in August and in Oiwake (Central Japan) in October. It has the habit of settling on the road, and, when disturbed, taking a short flight and returning to the same spot.

In China *V. antiopa* only occurs, so far as I am aware, in the western portion of the country, where it is found not uncommonly at high altitudes. Except that the yellow border is just a trifle brighter and more thickly sprinkled with black scales, the Japanese and Chinese specimens do not differ from European examples.

Distributed throughout the temperate portions of the Northern Hemisphere.

### **Vanessa urticæ.** (Plate XXV. fig. 1, var.)

*Papilio urticæ*, Linnæus, Syst. Nat. x. p. 477 (1758); Esper, Schmett. i. pt. i. pl. xiii. fig. 2 (1777); Hübner, Eur. Schmett. i. figs. 87-89 (1793?).

*Vanessa urticæ*, Godart, Enc. Méth. ix. p. 306 (1819); Lang, Butt. Eur. p. 173, pl. xl. fig. 3 (1884); Pryer, Rhop. Nihon. p. 26, pl. vi. fig. 8 (1888).

*Vanessa connexa*, Butler, Proc. Zool. Soc. Lond. 1881, p. 851.

“Expands from 2.0 to 2.30 inches. Hind margins of all the wings dentate; the fore wings have only one angular projection. All the wings are reddish orange, with rather narrow dark border enclosing a row of bright blue lunules. The fore wings have three black spots on the costa, two small ones in the centre, and one larger one on the inner margin, not two as in the preceding species [*v-album*]; the space between the costal spots is yellow; external to the third one is a white spot; there is also a yellow patch external to the inner marginal spot. Hind wings blackish at the base, on the costa a large black spot with a yellow patch placed externally to it. Underside: the markings have much the character of *V. polychlorus* and *V. xanthomelas*, but are much lighter.” (*Lang, l. c.*)

This species is represented in China by a form which I now describe as,—

Var. **chinensis**, var. nov. (Plate XXV. fig. 1, ♀.) Larger than typical *V. urticae*. The colour of upper surface is deeper fulvous; the blue submarginal spots are especially conspicuous on the secondaries; marginal border entirely black. Under surface similar in colour to that of var. *kashmirensis* and var. *rizana*; the black line limiting the basal area of secondaries is nearly straight and only slightly angulated.

Occurs only at high elevations in Western China, and is rather common.

The Japanese form of *V. urticae* has been described by Mr. Butler as *V. connexa*, but I have not the least doubt that it is a well-defined local race of *V. urticae*.

Var. **connexa**, Butler. “Allied to *V. urticae* of Europe, but the second black costal patch on the primaries united to the interno-median patch and the latter to the inner margin, so as to form a broad central angulated black band right across the wing; no trace of blue submarginal lunules on the primaries; the red discal area of the secondaries much narrower and the brown area darker. Wings below considerably darker, the secondaries even darker than in *V. californica*, the disk being densely striated with purplish brown; the black-edged green submarginal stripe rather lunate than sagittate, and almost wholly black on the primaries; the brown-edged lilac marginal stripe better defined and more lunulate in character. Expanse of wings 2 inches 2 lines.” (*Butler, l. c.*)

This form appears to be restricted to the Isle of Yezo and is common at Hakodate.

In India *V. urticae* is represented by two forms, of which I append the following descriptions and remarks:—

Var. **kashmirensis**, Kollar; de Nicéville, Butt. Ind. ii. p. 233. “*Male and female*. Upperside: both wings chestnut-red, this colour in the hind wing confined to a broad discal band, the base narrowly and inner margin below the first median nervule in the fore wing, the base of the hind wing, broadly black, thickly irrorated with ochreous scales, the outer margins black bearing two paler lines, within the latter on the hind wing are a series of prominent deep black lunules with blue centres. Fore wing with a quadrate black bar across the middle of the cell, then a pale yellow bar, then another much larger black bar, with another narrower pale yellow bar beyond it, beyond which again is a third rather smaller black bar, with a small bluish-white costal spot placed outwardly against it. A round black spot on the disc in the second median interspace, a larger one below it in the next interspace, a still larger but more irregular and diffused spot in the submedian interspace, but placed nearer the base of the wing, with a diffused pale yellowish patch beyond it. Underside: both wings brown, thickly striated with black; a submarginal lunulated black line. Fore wing with a narrow oval black spot with pale centre at the base of the cell, two fine black zigzag lines enclosing a black space across the middle of the cell, a large black patch at the end of the cell. Hind wing with the basal half blackish, this area sharply defined by an irregular deep black fine line, a more or less prominent ochreous spot at the lower end of the cell, and two fine black lines enclosing a blackish space across its middle.” (*de Nicéville, l. c.*)

Var. *rizana*, Moore, P. Z. S. 1872, p. 559; de Nicéville, Butt. Ind. ii. p. 234. "Male. Differs from *V. kaschmirensis* in being a smaller and more compact insect, and having the fore wing less produced at the apex; markings and colours disposed as in that species, but more clearly defined and the colours much brighter. Fore wing with the red colour near the base descending to near the submedian nervure, the posterior black spot being quadrate, well defined, and broadly bordered outwardly with clear yellow, this colour also bordering the two upper discal spots; submarginal black border narrow. Hind wing with the black base bordered outwardly by clear yellow; the submarginal row of dentate blue-centred black lunules being without the broad inner dusky border. Underside: darker than in *V. kaschmirensis*; markings similar." (Moore, l. c.)

As a rule, Central Asian, Himalayan, and Japanese forms of *V. urticæ* are without blue markings on primaries, but indications of these markings are to be found in some examples of each of the forms. *Kaschmirensis* is common through Kashmir, and I have taken both this form and *rizana* in the same localities. They are very fond of settling on wet places on paths and roadways. The larvæ, which are gregarious, were abundant on nettles at an elevation of about 6000 feet in the Goorais Valley, Kashmir, and I have taken the imago up to 14,000 feet. The *rizana* form is not so common as *kaschmirensis*, and some of the examples are hardly separable on the upper surface from some European specimens of *V. urticæ*, while on the under surface the colour is identical with that of the Chinese form (Plate XXV. fig. 1). Two specimens of *V. urticæ* in my collection, from Samarkand, are typical on the upper surface, but the colour of the under surface is like that of the Indian forms.

Alphéraky (Rom. sur Lép. v. pp. 79 & 113) states that a female specimen of *V. ladakensis*, Moore, was obtained by the expedition under General Przewalsky, at a great elevation in North-eastern Thibet, and that M. Potanine captured a specimen of *V. urticæ* in April near Nembé-Mourèn, Province of Kan-sou, which approached var. *turcica*, Staud., and another specimen taken in May near the river Tachitou (Plateau of Amdo), and one found in July between Mör-pin and Ou-pin in the Province of Kan-sou, resembled var. *kaschmirensis*, Koll. I am hardly disposed to consider *ladakensis* as a distinct species; one of its principal differential characters is the extension of the second pale costal blotch to the inner margin; but this is also found in some specimens of *kaschmirensis* and *rizana* as well as in certain examples of otherwise typical *V. urticæ* from Europe. Mr. McArthur, who bred a long series in Ladak, informs me that the larva of *V. ladakensis* conceals itself in a folded leaf of nettle, after the manner of *P. atalanta*, and

this fact would seem to separate it from *V. urticæ*. Probably, however, *ladakensis* may be only an isolated mountain form, and the exposed positions in which it occurs may have caused the larva to seek protection by constructing the leafy retreat referred to above. Although both *kaschmirensis* and *rizana* occasionally occur at the same altitudes as *ladakensis*, the breeding-ground of the two first-named is at a very much lower elevation, and their presence in the perfect state on the higher ranges is due to the insect's well-known love of roaming.

Grum-Grshimailo describes *V. urticæ*, var. *nixa*\*, from the Pamir, and states that he received a Thibetan example of the same form from M. Oberthür.

*V. urticæ* occurs throughout the whole of Europe and Northern and Eastern Asia.

Staudinger (Rom. sur Lép. vi. p. 179) states that it is common in Amurland, and that the specimens approach the form *polaris*, Staud.

### **Vanessa xanthomelas.**

*Papilio xanthomelas*, Esper, Schmett. i. pt. 2, pl. lxiii. fig. 4 (1780?); Hübner, Eur. Schmett. i. figs. 85, 86 (1793?).

*Vanessa xanthomelas*, Godart, Enc. Méth. ix. p. 820 (1813); Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 137 (1857); Lang, Butt. Eur. p. 172, pl. xl. fig. 1 (1884); de Nicéville, Butt. Ind. ii. p. 235, pl. xviii. fig. 73, ♂ (1886); Pryer, Rhop. Nihon. p. 26, pl. vi. fig. 10 (1888).

“*Male and Female.* Upperside: both wings rich fulvous, the outer margin broadly black, bearing two indistinct diffused ochreous marginal lines, which are broken by bluish spots at the ends of the nervules. Fore wings with two black spots in the middle of the cell, often more or less joined, sometimes forming a single quadrate spot, a large quadrate black patch at the end of the cell bounded above by the costa and below by the third median nervule, beyond which is a pale yellow diffused patch on the costa, another black patch beyond decreasing in width from the costa to the lower discoidal nervule; with a pale yellowish more or less macular streak beyond from the costa to the upper discoidal interspace; two more or less rounded black spots on the disc, the lower the larger, divided by the second median nervule; two other larger similar spots in the submedian interspace, the outer one the smaller, less distinct and diffused; the costa more or less striated with ochreous and black. Hind wing with a large somewhat rounded black spot from the middle of the costa to the discoidal

\* Var *nixa*, Gr.-Gr. (Rom. sur Lép. iv. p. 426). “Elle se distingue du type: 1) par l'absence presque complète de taches bleues dans la bande marginale des ailes antérieures; 2) par une semi-ombre noirâtre assez large limitant du côté intérieur la bande marginale des ailes postérieures, et 3) par la coloration unie noir-roux du dessous des ailes antérieures.

“Cette forme vole au Darvaz dans le défilé de Khobou-rabat, sur les pentes méridionales des monts Darvaz, à une altitude de 9000 p. Juin.”



nervule, the discocellulars defined with two fine black lines, a prominent series of blue lunules on the black margin within the ochreous lines. Underside ochreous, densely striated with brown and black, the basal half and outer margins of the wings much darker. Both above and below this species is densely hairy, more so than any other Indian species of Butterfly known to me." (*de Nicéville, l. c.*)

"*Larva.* Black, with white dots, yellowish-white dorsal and lateral stripes, the spines black. Gregarious on various kinds of *Salix* in June." (*Lang, l. c.*). I found larvæ, pupæ, and imagines in the Goorais Valley, Kashmir, in September; the larvæ were feeding on willow, and the pupæ were suspended from twigs.

Pryer states that *P. xanthomelas* is "very abundant about Yokohama. It feeds on willows, but is more often found on the *Celtis*, large trees being frequently completely stripped of leaves by the larvæ. Only one brood appears during the year, and the perfect insect hibernates."

Oberthür says the species is plentiful in the Isle of Askold (*Etud. d'Entom.* v. p. 15).

Common throughout Japan and the Corea. It is rather plentiful at Ichang and Chang-yang in Central China, but does not appear to occur in Western China. In Amurland it has been found in most places visited by collectors. It appears to be a rare species in India, and its range is restricted to the Western Himalayas. Lang says that the species is "confined to the eastern parts of Europe, including Germany, the North-east of Switzerland, Hungary, and Central Russia to 60°."

I am quite of Mr. de Nicéville's opinion that there are no satisfactory characters by which this species can be specifically separated from *V. polychloros*. Dr. Staudinger also appears to hold the same view (*Hor. Soc. Ent. Ross.* xiv. pp. 263, 264, 1878).

### **Vanessa vau-album.**

*Papilio vau-album*, Wien. Verz. p. 176 (1776); *v-album*, Fabricius, Mant. Ins. ii. p. 50 (1787); Hübner, Eur. Schmett. i. figs. 83, 84 (1793?).

*Vanessa v-album*, Godart, Enc. Méth. ix. p. 306 (1819); Lang, Butt. Eur. p. 172, pl. xl. fig. 2 (1884); de Nicéville, Butt. Ind. ii. p. 236 (1886); Pryer, Rhop. Nihon. p. 25, pl. vi. fig. 9 (1888).

*Papilio l-album*, Esper, Schmett. i. pt. 2, pl. lxii. figs. 3 a, b (1780).

"*Male and female.* Upperside: both wings deep fulvous. Fore wing with a black constricted spot across the middle of the cell, a large quadrate spot at its end, reaching from the costa to the third median nervule, with a pale yellow diffused costal patch on each side of it, the apex broadly black, having a pure white costal spot divided by the fourth and fifth subcostal nervules, a round black spot in the second median interspace, two black spots each in the

two following interspaces, the margin broadly black bearing two indistinct ochreous lines, the base and inner margin sprinkled with fuscous scales. Hind wing with a large rounded black spot from the middle of the costa to the discoidal nervule, with a white quadrate spot placed outwardly against it, the margin broadly black enclosing a more or less distinct series of rounded spots paler than the ground-colour and two indistinct marginal lines. Underside ochreous, but very variable, both in the tone of the ground-colour and the extent and disposition of the markings, more or less densely irrorated and striated with various shades of black, brown, and white, the basal area darker, sharply outwardly defined with a very irregular black line, the outer margin of the fore wing between the angulations also darker, and bearing a bluish line; hind wing with a small white mark at the end of the cell often obsolete." (*de Nicéville, l. c.*)

*Larva.* "Brownish red, with a dark dorsal line and yellowish-white lateral stripes; the spines are yellowish with darker tips. Gregarious on poplar and willow in June." (*Lang, l. c.*)

This species occurs in Yezo and mountainous districts of Central Japan, Amurland, Kashmir, Northern Asia, Central Russia, and Eastern Europe.

Oberthür (*Etud. d'Entom. v. p. 15*) says that it is common in the Isle of Askold. It has not hitherto been found in China, but probably may occur in mountainous parts of that country.

My Japanese examples of *V. vau-album* do not differ from European specimens of the species.

### Genus GRAPTA.

*Grapta*, Kirby, *Fauna Bor.-Am. iv. p. 292* (1837); *Doubleday, Gen. Diurn. Lep. i. p. 195*; *Godman & Salvin, Biol. Centr.-Amer., Lep. Rhop. i. p. 216.*

"The secondary male sexual organs in *Grapta* have the tegumen very feeble, but with lateral projections, one on each side, meeting in the middle line below the central spine; the harpagones have the dorsal edge prolonged into a stout incurving spine.

"The palpi are hairy, and clothed anteriorly with densely matted scales; the terminal joint is about one third the middle joint, which is slightly swollen; the antennæ have 37 joints, whereof 11 form a moderate club, the last joint of which is blunt; the front legs of the male are slightly hairy but clothed with densely matted scales; coxa =  $\frac{1}{2}$  femur + trochanter; tibia = femur; tarsus =  $\frac{1}{2}$  tibia; the claws of the other legs are strongly curved, the paronychial being also curved and the pulvillus well developed. The margins of the wings are very undulating, the costa of the primaries sinuated towards the base; the first and second subcostal branches are thrown off before the end of the cell, the third a short way beyond it; the upper discocellular is short and only half the middle. The costal nervure of the secondaries is much curved, the precostal being nearly at right angles to it. *Grapta* may be distinguished from *Vanessa* not only by the curvature of the costa and the crenulated margin in both wings, but by the palpi and front legs being clothed with large densely-matted scales." (*Godman and Salvin, l. c.*)

**Grapta gigantea.** (Plate XXV. fig. 6, ♀.)

*Grapta gigantea*, Leech, Entomologist, xxiii. p. 189 (1890).

*Female.* Primaries fulvous, thickly sprinkled with black scales at the base; costal margin spotted with black and yellow; discal and costal black markings arranged as in *G. c-album*, but larger; external margin broadly black, intersected by two fulvous waved transverse lines. Secondaries fulvous, thickly dusted with black scales at the base and lower half of the wing; below a large black patch on the disc is a blackish cloud extending to abdominal fold, and beyond is a broad black transverse band, the outer edge of which forms a series of points on the nervules; external margin broadly black, intersected by two fulvous lines as in primaries. Under surface ochreous-brown, marbled with pale violet-brown, and intersected by indistinct black lines; before the external margin of all the wings are two dentated black lines; these are interrupted by the nervules, and the space between them is leaden grey; preceding these lines, on the primaries, is a series of eight dots, the third, seventh, and eighth with pale centres; on the disc of primaries is a silvery white spot placed on the third median nervule; the silvery white mark on secondaries is large, and in shape represents three sides of a square.

Expanse 72 millim.

One female example taken at Ta-chien-lu in July, at an elevation of 7500 feet.

This species is allied to *G. c-album*, Linn., but it is much larger, and the margins are more decidedly indented. The mark on under surface of secondaries is very like the same character in some of my specimens of *G. c-album* from Japan; but in the marking of the under surface of all the wings *G. gigantea* more nearly resembles *V. canace*, and it also agrees with that species in having a white spot on under surface of primaries, a character not usual in the *Vanessa* group.

**Grapta c-album.** (Plate XXV. fig. 5, var. ♀.)

*Papilio c-album*, Linnæus, Syst. Nat. x. p. 477 (1758).

*Vanessa c-album*, Lang, Butt. Eur. p. 170, pl. xxxix. fig. 4 (1884); de Nicéville, Butt.

Ind. ii. p. 237 (1886); Pryer, Rhop. Nihon. p. 27, pl. vi. figs. 6 a, 6 b (1888).

*Vanessa hamigera*, Butler, Ann. & Mag. Nat. Hist. (4) xix. p. 92 (1877).

*Vanessa fentoni*, Butler, Cistula Entom. ii. p. 281 (1878).

*Vanessa lunigera*, Butler, Proc. Zool. Soc. Lond. 1881, p. 850; Waterhouse, Aid Identif.

Ins. pl. 106.

*Vanessa c-album*, var. *tibetana*, Elwes, Trans. Ent. Soc. 1888, p. 363, pl. x. fig. 1.

“*Male and Female.* Upperside, both wings varying in shade from light fulvous to dark fulvous-red, the base irrorated with fuscous and with a marginal black band, sometimes very broad on the hind wing, and enclosing a series of spots of the ground-colour at others much narrower,

with a series of black more or less conjoined spots within, divided from it by a band of the ground-colour, sometimes on the fore wing with a series of pale yellow spots placed inwardly against it. Fore wing with a black bar in the middle of the cell, often divided into two well-separated spots one above the other; a black bar at the end of the cell from the costa to the third median nervule, sometimes with a diffused pale yellow costal patch placed outwardly against it, with a wedge-shaped black bar beyond; with three rounded discal spots and a fourth less distinct diffused spot near the anal angle. Hind wing with three discal black spots. Underside extremely variable, the ground-colour sometimes ochreous, sometimes umber-brown, sometimes almost black, banded, streaked and striated with various shades of colour. Hind wing with a prominent comma-shaped white mark at the end of the cell." (*de Nicéville, l. c.*)

"*Larva*. Greyish brown, a whitish dorsal stripe reaching from the seventh to the thirteenth segment. Head with two horn-like projections. The colour of the head is black, and also that of the second segment, which is covered with minute bristly warts; the rest of the body is covered with branching spines, brown and white in colour. The spiracles are black, surrounded by white and red-brown. Feeds, from June to August, on *Ulmus*, *Humulus*, *Urtica*, &c.

"*Pupa*. Angulated, brown, decorated with metallic spots on the back of the thorax." (*Lang, l. c.*)

Var. **hamigera**, Butler. "Allied to *V. agni* and *V. comma*. Wings above bright orange-tawny; basal area bronzy brown; outer border golden brown, flecked with black; fringe varied with white; a submarginal series of semiconnected reddish chocolate-coloured spots, immediately inside which the ground-colour becomes yellower in tint; primaries with a large bifid black spot across the middle of the cell; a second similar spot divided by the base of the first median branch; a broad patch (widest upon the costa) across the discocellulars; two small, quadrate, discal black spots, placed obliquely upon the median interspaces; a broad, tapering, subapical patch, dentated externally, its base resting upon the costal margin; a large, subquadrate chocolate patch, confluent with the submarginal series (so as to enclose a lunule of the ground-colour) at external angle, and two linear, subapical, angulated markings of the same colour, but feebly indicated: secondaries with a rounded subcostal spot, an elongated, oblique discocellular spot, and a spot at the base of each median interspace black; a broad discal macular band of chocolate, only separated from the submarginal spots of the same colour by a series of fine golden-orange lunate spots: body brown; crest, collar, and thorax densely clothed with bright olive-green hairs having bright bronze reflections; palpi grey, fringed on their upper edge with white, their inferior surface white, edged externally with black. Wings below brown, varied with grey, and covered with irregular black striæ; two extremely irregular transverse black lines, indicating a central band; the disk of primaries and a broad, subapical, costal patch on the secondaries, white, clouded with grey and striated with grey and black; a discal series of more or less rounded spots, and a submarginal series of lunated spots, golden green: secondaries with a central, silvery white, semicircular marking: pectus purplish grey; tibiæ and tarsi yellow; venter grey, yellowish towards anus. Expanse of wings 2 inches 2 lines.

"About 370 miles from Tokoi." (*Butler, A. & M. N. II.*)

Var. **fentoni**, Butler. "Wings bright tawny; primaries with black markings as in *V. satyrus* of the United States, excepting that the two spots upon the median interspaces are of twice the size; secondaries with the black spots across the middle arranged as in *c-album*; outer

border broadly and irregularly black, intersected by six broad subconfluent lunated tawny spots; outer margin irrorated with tawny; bases of the wings, abdominal border of secondaries, and body as in the allied species; wings below extremely like *V. satyrus*, but paler, and with the bands less strongly defined; the silver *C* shorter, and, therefore, less like a *G*. Expanse of wings 2 inches 3 lines.—Tokei [Tokio], Japan." (*Butler, Cistula Entom.*)

Var. **lunigera**, Butler. "Allied to *V. fentoni*, but altogether duller in colour; the black spots above considerably larger; the lunate subconfluent spots on the external area of secondaries replaced by a series of small lunules: under surface with all the bands considerably darker and broader, the silvery-white J-shaped marking on the secondaries replaced by a J-shaped character. Expanse of wing 2 inches 5 lines.—N. Ihuri, Yesso, July (*coll. M. Fenton*).

"This species has the costal margin of the primaries more produced, and the apical area distinctly narrower than in *V. fentoni*; it differs from the latter in pattern and coloration much as *V. faunus* of North America does from *V. satyrus*." (*Butler, P. Z. S.*)

Var. **tibetana**, Elwes. "This variety may be distinguished by the bright reddish colour of the wings above and the absence of any yellowish spots on the dark border of the hind wing, which are seen in all my North-western [Himalayan] and Turkestan specimens. On the underside there are two types of coloration, the mottled one with complete *c*-mark, and the dull brownish one with straight or imperfect *c*-mark, both of which are seen in European *c-album*." (*Elwes, l. c.*)

Var. **extensa**, var. nov. (Plate XXV. fig. 5, ♀.) Larger than *lunigera*, Butler; the black markings are similar in arrangement, but the spots in the discoidal cell are smaller and well separated from each other: the secondaries have the basal portion and abdominal fold dusky grey, the latter edged with long fulvous hairs; all the black markings are narrower than in *lunigera*, and those on the outer marginal area are ill-defined. Under surface as in *lunigera*, but less mottled with darker colour, and the silver mark is very narrow. The female is rather paler than the male, and the black markings on costa and outer margin are partly effaced. Expanse, ♂ 66 millim., ♀ 70 millim.

*G. c-album* is common in mountain districts of Central Japan and in Yesso, and is as variable in Japan as in Europe. Mr. Butler has described three forms, and Pryer, in his 'Rhopalocera Nihonica,' figures two of them, viz., *hamigera* (pl. vi. fig. 6 *a*) and *lunigera* (pl. vi. fig. 6 *b*). I took the *lunigera* form in Japan from June to August, but only met with *hamigera* in October.

The Chinese form, which I have described as var. *extensa*, occurs in June and July at Kiukiang. The specimens taken in July at Ta-chien-lu agree with var. *tibetana*, Elwes. Dr. Staudinger states that *G. c-album* is found throughout Amurland, but is nowhere common; he adds that the species is as variable there as it is in Europe, and that one example among the specimens which he received is referable to var. *interposita*, Staud., a form of *G. c-album* from Central Asia. Fixsen says that Corean specimens are larger and more firey-coloured than those from Europe.

According to de Nicéville (*l. c.*) *V. c-album* occurs in the Himalayas, from Kashmir to Sikkim, and is very variable in the shape of the wings, coloration, and extent and definition of the markings; the same writer is of opinion that *G. agnicula*\*, Moore, is only a form of this species.

**Grapta c-aureum.** (Plate XXV. figs. 3 ♀, 4 var. ♂.)

*Papilio c-aureum*, Linnæus, Syst. Nat. xii. p. 778 (1767).

*Polygonia c-aureum*, Hübner, Samml. Exot. Schmett. (1816–1824).

*Vanessa c-aureum*, Godart, Enc. Méth. ix. p. 324 (1819); Pryer, Rhop. Nihon. p. 25, pl. vi. figs. 7 a, 7 b (1888).

*Papilio angelica*, Cramer, Pap. Exot. iv. pl. 388. figs. G, H (1782).

*Vanessa pryeri*, Janson, Cist. Ent. ii. p. 269 (1878).

Light fulvous. On the primaries there are three black spots in the discoidal cell, which is closed by an elongated square black spot; towards apex there is a large blackish patch, often united with the first of an oblong series of four large black spots; another large black spot, bipupillated with blue, lies towards inner angle, and two smaller ones, with blue centres, towards apex; submarginal and marginal bands black, the space between them often filled up with black or fuliginous, except near inner angle. Secondaries have the area black, covered with long light fulvous hairs; three large black spots represent an angulated central band; submarginal band black, preceded by a series of six blue-centred black spots, the upper three united and the lower three often only separated from each other by the median nervules; sometimes the first spot of lower trio is united with the submarginal band. Under surface ochreous-yellow, traversed by darker lines, and mottled towards apex of primaries with brownish; all the wings have a darker central band limited by brownish lines, the outer one deeply angulated; the primaries have some brownish marks in the discoidal cell and a whitish spot towards apex, below which is often a series of black points, sometimes

\* *Grapta agnicula*, Moore, Proc. Zool. Soc. Lond. 1872, p. 559.

“*Male and Female.* Upperside bright fulvous red; both wings with prominent black markings disposed as in Kashmir specimens of *G. c-album*, excepting that in the fore wing the basal spot within the cell is broken up into two well-separated spots, and the marginal band in the male is nearly obsolete at the apex. Female with a broader marginal blackish-grey band, the band on the fore wing bordered by an inner row of yellowish spots, and that on the hind wing by a medial row of yellow spots. Underside very dark greyish brown, brownest at the base within the irregular medial transverse line, and covered with minute black strigæ; a transverse discal row of hardly perceptible small black spots with pale borders; a white comma-like mark on hind wing.

“*Hab.* Katmandu, Nepal; Goolmurg, North-east Kashmir.” (*Moore, l. c.*)

I have taken specimens of this insect, together with typical *G. c-album*, in the Goorais Valley, Kashmir, and have also received examples from Ladak, Lahoul, and Kulu, collected up to an elevation of 18,000 feet above sea-level.—J. H. L.

extending halfway across the secondaries; there is a silvery L-shaped mark about the centre of the secondaries, and the abdominal margin of these wings is pale violet-grey; in some specimens the lower two thirds of the central band is broadly bordered outwards with this colour.

Expanse, ♂ 56–65 millim., ♀ 62–72 millim.

Var. *pryeri*, Janson. (Plate XXV. fig. 4, ♂). “Allied to *V. angelica*, Cram., but smaller, and with the external dentations of the wings much stronger and more acute; above bright fulvous red, the black spots smaller than in *angelica*, and clearly defined; the apical margins rather broadly ochreous, speckled with brown and bordered inwardly with brown lunular marks; beneath ochreous-brown or chocolate, suffused with pinkish towards the apex; a central band and numerous fine irregular transverse lines on both wings, and several marks in the cell of the primaries similar to *angelica*, but darker and more clearly defined; the L-shaped silvery mark on the secondaries large and conspicuous. Expanse of wings 2–2¼ inches.” (Janson, *l. c.*)

The typical form (Pryer’s fig. 7 *b*) of this species occurs throughout the summer, but the var. *pryeri* (Pryer’s fig. 7 *a*) is only found in the autumn or in the spring after hibernation. I have received the type from every part of China visited by my collectors, but the *pryeri* form was only obtained by them at Ichang, Central China, and in the Province of Kwei-chow, Western China.

Some of the specimens of the typical form are much suffused with black on the upper surface.

Pryer states that the larva feeds on hemp (*Cannabis sativa*, Linn.) and wild hop (*Humulus japonicus*, S. & Z.).

Occurs commonly at Gensan. I took it also at several places in Central Japan and Yesso. Generally distributed in Western and Central China. Alphéraky records a female specimen from Pi-Kouà in North-west China (Rom. sur Lép. v. p. 113, 1889) and Staudinger (Rom. sur Lép. vi. p. 179) states that it occurs in Amurland.

### Genus ARASCHNIA.

*Araschnia*, Hübner, Verz. bek. Schmett. p. 37 (1816); Doubleday, Gen. Diurn. Lep. i. p. 187 (1848).

“HEAD densely clothed with long hairs; a chestnut tuft of hairs outside the antennæ.

“Eyes oval, moderately prominent, hairy.

“Maxilla slender, scarcely so long as the thorax.

“Labial palpi porrect, slightly ascending, projecting considerably beyond the forehead, scaly, and densely clothed with long hairs in front and also behind, except towards the base; the second joint without any dorsal tuft. First joint subcylindric, curved, about two thirds as

long as the second; second joint subcylindric, rather stoutest in the middle, truncate at the apex; third joint scarcely the length of, and slenderer than, the second, tapering to a point at the apex.

“*Antennæ* about two thirds the length of the body, rather slender, terminating in a short pyriform club.

“*THORAX* elongate, oval, hairy.

“*Anterior wings* subtriangular; the anterior margin but slightly curved; outer two thirds the length of the anterior margin, emarginate; inner longer than the outer margin, slightly sinuate, emarginate. Costal nervure stout, extending beyond the middle of the wing. Subcostal nervure slender; its first branch thrown off before the end of the cell; its second about at equal distance beyond it; its third about equidistant from the second and fourth. Upper discocellular scarcely existing. Lower discocellular wanting, yet its position faintly indicated. Third median nervule gradually curved.

“*Posterior wings* subtriangular, all the margins about equal in length; the anterior and outer margins curved; the latter sinuate, slightly dentate; inner margin slightly emarginate above the anal angle. Precoastal nervure simple, nearly straight. Discoidal nervure separating from the subcostal nervule soon after its origin. Cell open. Third median nervule but little curved.

“*Anterior legs* of the male clothed with long slender hairs. Femur and tibia slender, the latter slightly longer than the former. Tarsus shorter than the femur, one-jointed, nearly cylindric, tapering to a point at the apex.

“*Anterior legs* of the female more elongate, scaly. Tibia about three fourths the length of the femur. Tarsus nearly cylindric, fully as long as the tibia, five-jointed; all the joints, except the fifth, armed at the apex with a stout spine on each side. First joint rather stoutest, one third longer than the rest combined; second about two fifths the length of the first; third one half the length of the second; fourth and fifth combined rather more than equal to the third; the fourth very obliquely truncate at the apex.

“*Middle and posterior legs* with the femora slightly longer than the tibiæ; the latter and the tarsus of about equal length. Femora stout. Tibia nearly cylindric, spiny on each side within; the spurs long. Tarsi spiny laterally and, except the fifth joint, below; the spines of the lower surface tending towards an arrangement in a double series. First joint three fourths the length of the rest combined; second and third nearly equal; fourth very short; fifth longer than the second. Claws much curved, grooved below. Paronychia long; the outer lacinia very slender, pointed, as long as the claw; inner obtuse, much shorter than the outer. Pulvillus jointed, nearly as long as the claw.

“*ABDOMEN* moderately stout, about three fourths the length of the inner margin of the wing.

“*LARVA* spiny; the head with two spines longer than those of the body; the prothoracic segment unarmed.

“*PUPA* angular, tuberculate; the head bifid.” (*Doubleday, l. c.*)

### **Araschnia levana.** (Plate XXVI. figs. 9, 12, 15.)

*Papilio levana*, Linnæus, Syst. Nat. xii. p. 783 (1767); Esper, Schmett. i. pt. 1, pl. xv. fig. 2 (1777), pt. 2, pl. lix. fig. 5 (1780?); Hübner, Eur. Schmett. i. figs. 97, 98 (1794?), figs. 728, 729 (1824–1826).



*Vanessa levana*, Godart, Enc. Méth. ix. p. 312 (1819); Lang, Butt. Eur. p. 167, pl. xxxviii. fig. 4 (1884).

*Vanessa levana*, var. *prorsa*, Lang, l. c. p. 168, pl. xxxix. fig. 2.

*Araschnia obscura*, Fenton, Proc. Zool. Soc. Lond. 1881, p. 850.

*Vanessa levana*, var. *porima*, Ochsenheimer, Schmett. Eur. i. p. 134 (1807); Lang, l. c. p. 168.

“Expands from 1·0 to 1·25 in. (the smallest species). The wings are fulvous; fore wings with a slight projection at the anal angle, yellow on the costa; they have several rows of small black spots towards the base and larger ones on the central area and at the apices, near which there are one or two white spots. Hind wings dentated along their hind margins, fulvous, spotted with black, and with a hind-marginal row of very small blue lunules. Fringes black and white. Underside: ground-colour purplish-brown, the nervures white. The fore wings have a small white circle in the discoidal cell near the base, and outside this four white lines; near the apex are some yellowish-white and brown markings; towards the anal angle are some light brown markings, and above these two pure white spots surrounded by light blue. The hind wings have an oblong white spot near the base touching the costa; across their centre extends, from the costa to inner margin, a brownish-white band, and a line of the same colour runs parallel to the hind margin throughout its entire length, except opposite the angular projection of the wing, where it is obscured by a large light blue blotch. The pattern of the underside, resulting from a combination of the white lines of the nervures and the delicately-defined markings, is exceedingly intricate, and has earned for the species its common French name of ‘Carte géographique.’” (*Lang, l. c.*)

*Larva*. “Black or dark grey, sometimes with brown stripes; spiny, the spines being black or brownish-yellow. Gregarious on *Urtica dioica*.” (*Lang, l. c.*)

Var. **prorsa**, Linnaeus. “About the same size and the same shape as *levana*, but all the wings are brownish black. Fore wings with a white central band interrupted much in the same way as that of *Limenitis sibylla*. External to this is a row of small white spots beginning near the apex; near the anal angle is a red line, which is continued along the margin of the hind wings. Hind wings with a well-defined band across their centre, and besides the red line mentioned above two others, one on each side of it, less distinct. Marginal fringes black and white. Underside as in *levana*, but the ground-colour is darker and the yellow spots are replaced by white ones; the central white band is distinct and the light blue blotches are absent.” (*Lang, l. c.*)

Var. **obscura**, Fenton. (Plate XXVI. fig. 9.) “Allied to *A. fallax*, Janson (Cist. Ent. 1878, p. 271). *Male*. Above soot-black: primaries with four short, narrow, transverse lines in the cell, and one below the median vein near the base, pale ochreous; the transverse interrupted band on the disk extending quite to the costal edge at one end, but only to the submedian vein at the other, very pale ochreous; four spots in a curved row near the apex, the first and second, and a small linear spot about the middle and close to the margin, pale ochreous, the third (the smallest) and the fourth (the largest) and a small spot between the second and third median veinlets pure white; no irregular submarginal lunular reddish-sienna spots: secondaries produced at the middle of outer edge; no undulating reddish-sienna lines; fringe with white sinuations interrupted by black at the end of the nervules. Below pale ochreous; the irregular marks at the base reddish-chocolate; the apical third occupied by a broad band of

the same colour bordered inwardly with black, interrupted by the nervules: primaries with an additional small white spot in the band, between the first and second median veinlets; the markings below the cell black, dusted in some specimens with reddish-chocolate. Expanse of wings 1 inch 8 lines.

“Forest-lands, Hokkaido [Yesso]; August.” (*Fenton, l. c.*)

This form of *A. levana* does not appear to differ in any material respect from the European *prorsa*. I have not been able to examine the original type, but Mr. Janson has kindly sent for my inspection specimens taken by Mr. Fenton at the same time and place as the type of *obscura*. In some specimens of both sexes the apical spots of primaries are distinctly yellow, and in some examples there is a red submarginal line on secondaries.

It occurs in Yesso, and commonly at Gensan, Corea, in July and August.

The typical form of *A. levana* occurs at Hakodate, in the Island of Yesso, during May and June, as also does var. *porima* (Plate XXVI. fig. 12). The var. *prorsa* is found in Yesso and Gensan, Corea, in July and August. So far as has been ascertained at present, *A. levana* does not occur on the main or southern Island of Japan. As will be seen by reference to the figures of this species on Plate XXVI., none of the specimens show any appreciable difference from European representatives of the respective forms.

The more produced angle of secondaries and the white quadrate spot on the costal area of the under surface of these wings very readily distinguish this species in all its forms from *A. burejana*.

The insect figured by Pryer (Rhop. Nihon. pl. v. fig. 12) as *Vanessa levana* is referable to *A. fallax*, Janson.

*A. levana* occurs throughout the greater part of Southern and Central Europe, its range extending to Armenia, Southern Siberia, Amurland, Corea, and Japan.

### **Araschnia burejana.** (Plate XXVI. figs. 10, 11, 13, & 14.)

*Araschnia burejana*, Bremer, Bull. Acad. Petr. iii. p. 466 (1861); Lep. Ost-Sib. p. 15, pl. i. fig. 6 (1864).

*Vanessa burejana*, Pryer, Rhop. Nihon. p. 25, pl. v. fig. 11 (1888).

*Araschnia strigosa*, Butler, Journ. Linn. Soc., Zool. ix. p. 54 (1866).

*Araschnia burejana*, Bremer.—“Alæ dentatæ supra fulvo-nigroque-maculatæ et fasciatæ, dimidio basali nigro, fulvo-reticulato, fascia communi fulva a medio alarum anticarum ad marginem interiorum posticarum ducta; margine posteriore nigro, strigis fulvis.

“Alæ anticae supra maculis costalibus duabus fulvis fasciaque submarginali irregulari fulva, in

cellula 5-ta ocellum nigrum albo-pupillatum, in cellula 4-ta punctum album includente. Alæ posticæ fascia submarginali fulva serieque macularum nigrarum; margine posteriore nigro, strigis cæruleis ornato.

“Alæ subtus ferruginæ fascia media communi flava, a margine anteriore alarum anticarum ad marginem internam posticarum ducta; dimidio basali flavo- et nigro-reticulato; area postica ferrugineo-fulvoque-varia, plagam violaceam punctaque alba quatuor includente; marginibus posterioribus flavo-bilineatis.

“Alæ posticæ ante has lineas serie e maculis longitudinalibus nigro-cinctis, in cellulis 1-ma, 2-da, et 3-tia cæruleis, in reliquis flavis, composita. 35–39 mm.” (*Bremer, Lep. Ost-Sib.*)

*Araschnia strigosa*, Butler.—“♂. Alæ anticæ costa elongata; posticæ margine postico valde sinuato, cauda media obtusa. Alæ supra area basali fusca, strigis ferrugineis pallidis interrupta, fascia media obliqua pallida apud marginem abdominalem bifurcata. Anticæ ocello subapicali fusco, albo pupillato, maculisque albis striga ferruginea inclusis submarginatæ; posticæ ocellis nigris, fascia lata inclusis submarginatæ. Corpus fuscum.

“Alæ subtus area basali ferrugineo, fusco alboque variæ; venis albis, fasciaque distincta media alba, ad marginem internam bifurcata, ramisque tenuissimis obliquis ad costam basalem anticarum currentibus; area apicali ferruginea, macula magna media violacea, maculisque ochreis variegata, fascia media extus fusco marginata punctisque octo albis inter venas positis; margine postico pallido lineis duabus nigris marginato, posticisque fascia cinerea albo interrupta et marginata. Corpus cinereum. Alar. exp. unc. 1 $\frac{3}{4}$ .

“♀. Alæ anticæ costa brevi; posticæ margine postico minus sinuato, cauda media distincta. Alæ subtus fasciis pallidis angustis, margine postico angusto. Exp. alar. unc. 1 $\frac{1}{2}$ .” (*Butler, l. c.*)

This species is common in Yesso and the mountainous parts of Central Japan. The majority of the specimens are identical with *strigosa*, Butler, and exhibit no specific differences from Amurland examples of *A. burejana*. I have also received specimens from Chang-yang in Central China and Huang-mu-chang, Western China; some of these (Plate XXVI. figs. 13 & 14) are much larger and paler than typical *A. burejana*. A figure of Butler's type of *strigosa* is given on Plate XXVI. fig. 11. Figure 10 on the same Plate represents a female of the ordinary Japanese form. I have also taken specimens at Gensan, Corea, in July.

*A. burejana* is a very variable species; the white fascia on under surface of secondaries is sometimes traversed by a black line, as in the type of *strigosa*, Butler. In a few specimens this line is diffuse and occupies a large portion of the fascia. The proportion of the brown markings is subject to modification in both sexes. The females are always browner on the upper surface than the males. Specimens taken in June near Hakodate have less marking than those from Amurland.

In Amurland the species occurs from the middle of May to the middle of July, and Dr. Staudinger, who has hitherto considered it to be peculiar to that

district, states that it is single-brooded. I am inclined to think that there are probably two generations of the species in China and some parts of Japan.

**Araschnia doris**, sp. n. (Plate XXVI. figs. 4 ♀, 5 ♂.)

*Male*. Black with fulvous markings, very similar to those of *A. burejana*; the central interrupted band of primaries and the entire one of secondaries broad and yellowish in colour.

*Female*. Similar to the male, but all the fulvous markings are broader, and those on the outer portion of primaries often confluent.

On the under surface both sexes agree in many respects with *A. fallax*, but the central band of primaries is less regular, and that of the secondaries is traversed by a blackish interrupted line; the chocolate band is much narrower, and composed of five spots on each wing: those on primaries are of irregular shape, the second has a minute whitish dot in its centre, the third smaller than the others and almost effaced by a whitish spot, the fourth encloses a small whitish spot, and there is a similar spot on the inner edge of the fifth; those on secondaries are ovate with dark centres; the second and fourth are pupilled with whitish and the third with lilacine.

Expanse, ♂ 50-55 millim., ♀ 45-58 millim.

Occurs in June and July at Chang-yang and Ichang in Central China, and at Moupin, Omei-shan, Wa-ssu-kow, and Pu-tsu-fong in Western China.

**Araschnia fallax**. (Plate XXVI. figs. 7 ♂, 8 ♀.)

*Araschnia fallax*, Janson, Cistula Entom. ii. p. 271, pl. v. fig. 3 (1878).

*Vanessa levana*, Pryer (nec Linn.), Rhop. Nihon. p. 24, pl. v. fig. 12, ♀ (1888).

“Above brownish black; the thorax with greenish iridescent pubescence; apical margins of the abdominal segments narrowly bordered with white; antennæ black, the underside spotted with ochreous, apex of the club red; primaries with a Y-shaped mark near the base and two short transverse lines in the cell pale brown, a transverse band on the disc strongly interrupted near the middle, five small spots in a curved row near the apex, and a small linear spot about the middle and close to the margin pale ochreous, five irregular submarginal spots brick-red; secondaries with a transverse pale ochreous band before the middle and two fine undulating brick-red lines on the apical half, united anteriorly and interrupted by the nervures, the fringes of both wings spotted with white; beneath pale ochreous, the base of the wings with several irregular red-brown and black marks, the former margined with dark brown, the centre of both wings without markings, leaving a broad transverse band of the ground-colour, the apical third occupied by a broad red-brown band, bordered on either side by subquadrate blackish spots, the centre with several small white spots, the apical margin with two fine black lines, the anal angle of secondaries with a small blue spot. Expanse of wings 2 inches 2 lines.” (*Janson, l. c.*)

*A. fallax* differs from all forms of *A. levana* in the rounder outline of the secondaries, in which character it agrees with *A. proroides*, Blanchard. The central band of secondaries, which may be either pure white or deep yellow

in colour, is of uniform width throughout; the fulvous submarginal line is uninterrupted and parallel with the outer margin. The design of the under surface separates this species at once from its allies.

Seeing how closely *fallax* resembles *prorsa*, and that both are summer insects, it seems highly probable that the former may have a spring brood as well as the latter.

When dealing with far fewer specimens, I considered that *fallax*, Janson, was the second brood of *A. burejana*; but if it were so *fallax* would surely occur in either Amurland or China, instead of being confined, as it appears to be, to Japan. The same objections apply to *prorsoides* being a form of *fallax*. The specimens previously recorded by me from Corea as *A. fallax* I have now determined to be only strongly marked examples of the *prorsa* form of *A. levana*. Dr. A. Fritz (Zool. Anzeiger, 1890, p. 13) discusses Japanese *Araschniæ*, but as he does not clearly indicate the various forms, I am unable to follow his remarks.

Occurs at Hakodate, Yokohama, and Oiwake in Japan.

**Araschnia prorsoides.** (Plate XXVI. figs. 1 ♂, 2 ♀.)

*Vanessa prorsoides*, Blanchard, Comptes Rend. Acad. Sci. lxxii. p. 810 (1871).

*Vanessa prorsoides*, var. *levanoides*, Blanchard, l. c.

*Araschnia prorsoides*, Elwes, Proc. Zool. Soc. Lond. 1891, p. 285, pl. xxvii. figs. 5 ♂, 6 ♀.

*Araschnia strigosa*, Alphéraky (nec Butler), Rom. sur. Léop. v. p. 111, pl. v. fig. 6 (1889).

“*Vanessa prorsoides*, notablement plus grande que la *Vanessa prorsa*, avec les ailes plus fortement dentelées, rayées suivant un système analogue, et une variété *levanoides*, ressemblant par la teinte général des ailes à la variété *levana*.” (Blanchard, l. c.)

“Above most like the European form *porima*, Ochs., but has the broad band on the fore wing above in a straight line with that on the hind wing, and the outer bands paler and straighter than in European or Japanese specimens. Beneath, the general coloration and markings resemble *burejana* more than *porima*, but this species is paler than either, and has a lilac patch round the white marginal spots on both wings as in *burejana*. In size it is constantly much larger than European and rather larger than Japanese specimens; the margin of the hind wing is also much more scalloped out between the veins.” (Elwes, l. c.)

*A. prorsoides* is nearest allied to *A. fallax*, Janson.

Alphéraky (l. c.) figures a specimen of this species taken by Potanine in North-western China under the name of *strigosa*, Butler, an error he would have avoided if he had had the opportunity of examining Butler's type. The figure represents a form of *A. prorsoides*, Blanch.

Staudinger (Rom. sur Lép. vi. p. 181) states that he received an *Araschnia* from Japan which he considered referable to *strigosa*, Butler, and probably the spring form of *A. fallax*, Janson. In response to my request for a specimen of *strigosa* from Japan, Herr Bang-Hass sent me an example of *prorsoides*, Blanchard, from China, and Dr. Staudinger stated that he was unable to find his Japanese specimens. I have no doubt that these latter are also referable to *prorsoides*, as there were some examples of this species from Oiwake in the late Mr. Henry Pryer's collection.

Generally distributed in Western China, occurring at elevations ranging from 5000 to 8000 feet, and is also found at Oiwake in Japan. Elwes states that Doherty met with this species abundantly above Mao, on the Manipur side of the Naga Hills, at 6000 to 8000 feet, in August and September. It was found in open ground near water. The larva feeds on a species of nettle.

The form from Moupin referred to by Blanchard as var. *levanoides* was only met with by my collectors at Wa-ssu-kow in June, at an elevation of 5000 feet. It is smaller than the type, and the brown bands are more pronounced.

***Araschnia davidis.*** (Plate XXVI. fig. 6, var. ♂.)

*Araschnia davidis*, Poujade, Bull. Soc. Ent. Fr. 1885, p. xciv; Oberthür, Etud. d'Entom. xiii. p. 38, pl. ix. fig. 102 (1890).

“ Envergure : 46 mill.—Ailes coupées comme chez *prorsa*, sauf les supérieures dont la convexité du bord externe est située plus au milieu. Dessus des quatre ailes brun foncé, les supérieures ornées de bandes irrégulières d'un fauve rougeâtre : une commençant un peu au-dessous de l'angle apical et parallèle à la sinuosité du bord externe ; contre cette bande, il y a deux points d'un jaune pâle surmontés d'une tache de même couleur qui touche la côte ; une bande oblique d'un jaune pâle, se fondant en fauve, part de la côte environ au tiers externe et va rejoindre à peu près le milieu de la première bande ; une troisième, sinueuse, touche l'extrémité de la cellule et se dirige vers le tiers externe du bord interne ; la cellule est traversée par une bande assez large suivie de trois lignes fines jaunes, dont deux sont presque parallèles à la bande, et la troisième forme avec la précédente un angle aigu dont le sommet est en haut ; la bande de la cellule se continue par une brisure à la base du troisième rameau de la nervure médiane et va rejoindre le milieu du bord interne. Ailes inférieures ayant, à partir du dernier tiers, une large bande fauve rougeâtre irrégulière, maculée de taches noirs dont la médiane est ronde ; la base de l'aile est traversée par quatre lignes jaunes dont les deux médianes forment un angle aigu.

“ Dessous : fond des ailes ocre rouge foncé varié de noirâtre, sur lequel les nervures se détachent en jaune clair, surtout aux inférieures ; les bandes du dessus se montrent plus accentuées en jaune pâle ; les points jaunes du dessus reparaissent en blanc au milieu de taches violettes ; la partie correspondante à la bande du dessus des inférieures est ornée de quatre points blancs

dont le médian est largement entouré de violet; une série de lunules irrégulières violettes, bordées de noir, précède la bordure des ailes inférieures; cette bordure est, ainsi qu'aux ailes supérieures, jaune clair finement lisérée de noir. Franges du même jaune, entrecoupées de brun aux nervures en dessus et en dessous.

“Un seul mâle, de Mou-Pin (Thibet oriental), capturé par M. l'Abbé A. David.—Coll. du Muséum.” (*Poujade, l. c.*)

As my specimens from China are larger and of a form differing from the type as figured by Oberthür in several characters, I describe them as

Var. **oreas**, var. nov. (Plate XXVI. fig. 6, ♂.) *Male*. All the fulvous markings are narrower and some of them yellowish; there is an interrupted blue submarginal line on secondaries. The colouring of the under surface is far more vivid; there is a lilacine patch enclosing three white dots towards apex of primaries, and a similar patch enclosing one white dot in the first median interspace; a lilacine submarginal line on the secondaries outwardly bordered with black, and a similar line faintly indicated on primaries. Expanse 52 millim.

This form occurs at Wa-ssu-kow, Chow-pin-sa, and Pu-tsu-fong. I received a number of specimens, but they are all males.

### Genus PSEUDERGOLIS.

*Pseudergolis*, Felder, Reise Novara, Lep. iii. p. 404 (1867); de Nicéville, Butt. Ind. ii. p. 119 (1886).

“Antennæ sat longæ, subtus vix annulatæ, sensim in clavam sat angustam exeuntes.

“Palpi ut in sectione *Precidis hedoniæ* sed paullo breviores et validiores.

“Alæ cellulis discoidalibus tenuiter clausis, anticæ geniculo discali majore quam in *P. hedonia* et affinis, ramo subcostali secundo a cellulæ extimo paullo magis distante, tertio in medio alæ emisso, posticæ vena discoidalī a ramo subcostali inferiore magis distante, quam in *Precide*.

“Facies *Ergolidibus* haud absimilis.” (*Felder, l. c.*)

“Antennæ rather long, beneath scarcely annulated, terminating gradually in a rather narrow club. Palpi as in section *hedonia* of *Precis*, but a little shorter and stouter. Wings with the discoidal cells slenderly closed. Fore wing with the discal geniculum (?bend in the lower discocellular nervule) greater than in *P. hedonia* and its allies, with the second subcostal nervule a little more distant from the end of the cell, the third given off in the middle of the wing. Hind wing with the discoidal nervule more distant from the lower subcostal nervule than in *Precis*. General appearance scarcely different from *Ergolis*.” (*de Nicéville, l. c.*)

### **Pseudergolis wedah.**

*Ariadne wedah*, Kollar, Hügel's Kaschmir, iv. pt. 2, p. 437 (1848).

*Pseudergolis wedah*, Moore, Proc. Zool. Soc. Lond. 1882, p. 240; de Nicéville, Butt. Ind. ii. p. 120, pl. xxiii. fig. 109, ♂.

*Precis hara*, Moore, Horsfield and Moore, Cat. Lep. Mus. E. I. C. i. p. 143, pl. iii. a. fig. 1 (1857).

“Upperside golden-brown, darker on outer margins. Both wings with three narrow transverse black bands on the anterior half, the outer band on the hind wing being zigzagged, with a

parallel row of small black spots between the outer and middle bands; within each discoidal cell are two narrow and rather square-shaped spaces, those on the hind wing being the narrowest. Underside dull brown, marked as above with deep brown, but the two inner bands broad, the outer very narrow; on the hind wing, above the marks, within discoidal cell, is a narrow brown mark; the outer margins are also deep brown." (*Moore, l. c.*)

Occurs commonly in Western China at Moupin, Wa-shan, Omei-shan, Chia-kou-ho, and Huang-mu-chang, and I received one specimen from Ichang in Central China. In India it is found in the Himalayas, Sylhet, Assam, Chittagong, and Burma.

### Genus PRECIS.

*Precis*, Hübner, Verz. bek. Schmett. p. 33 (1816); Distant, Rhop. Malay. p. 89 (1883).  
*Junonia*, sect. 2, Doubleday, Gen. Diurn. Lep. p. 209 (1849).

"Anterior wings subtriangular, the costal margin very strongly arched and convex; apical angle obliquely truncate and prominent, and together with remainder of outer margin distinctly waved; beneath the apical angle the outer margin is strongly sinuated and concave, after which it is convex to posterior angle; inner margin more or less concave. Costal nervure short; first and second subcostal nervules emitted close together near end of cell; third emitted about halfway between end of cell and apex of wing; fourth and fifth bifurcating at about one fourth from apex. Upper discocellular nervules angled at apex of cell and concave to lower discoidal nervule; lower discocellular nervule slender and indistinct, or somewhat obsolete. Discoidal nervules well separated at their base; first median nervule rounded at base, where it has an apparently common origin with the second; second and third nervules widely separated. Posterior wings subovate, the costal margin obliquely convex; outer margin very convex, waved, and produced into a short caudate appendage at anal angle. Abdominal margins convex and overlapping at base, and then distinctly concave and slightly divergent to anal angles. Costal nervure arched and extending to apex; discoidal nervule emitted a little beyond the bifurcation of the subcostal nervules; discoidal cell with the apex entirely open; median nervules arranged much as in anterior wings. Body short; palpi long, porrect, and pointed; antennæ slender, gradually thickened towards apex." (*Distant, l. c.*)

### *Precis iphita*.

*Papilio iphita*, Cramer, Pap. Exot. iii. pl. ccix. figs. C, D (1779).

*Precis iphita*, Moore, Lep. Ceyl. i. p. 39, pl. xxi. figs. 1, 1 *a* (imago), 1 *b* (larva and pupa) (1881); Distant, Rhop. Malay. p. 90, pl. xi. fig. 9, ♂, pl. ix. fig. 5, ♀ var. (1882); de Nicéville, Butt. Ind. ii. p. 63, pl. xix. fig. 84, ♂ (1886).

*Junonia iphita*, Butler, Cat. Fabr. Lep. B. M. p. 76 (1869).

*Precis intermedia*, Felder, Reise Novara, Lep. iii. p. 402 (1866).

'*Male and Female*. Wings above fuliginous brown, variable in intensity of hue. Anterior wings with two transverse fasciæ crossing cell, the margins of which are very irregular and dark fuscous, the first situate about centre and the second near apex; the apical half of wing is somewhat paler, and inwardly bounded by a dark fascia commencing near costa and outwardly and obliquely directed to first median nervule, from thence reflected inwardly and



terminating near centre of inner margin; between this and outer margin is a somewhat similar fascia, followed by two very dark submarginal lines, the outer one more prominently waved; marginal fringe and a small subapical spot whitish. Posterior wings with the apical half paler and with the fasciæ on the anterior wings continued, the first terminating near abdominal margin about one third from anal angle, the second broader and more outwardly curved than on anterior wings, and possessing on its outer edge four or five obscure ocellated spots placed between the nervules; submarginal lines as on anterior wings, but the inner one more waved. Wings beneath paler; both wings crossed by two somewhat broad, dark, basal fasciæ, the first crossing centre of cell of anterior wings, curved inwardly on cell of posterior wings and indistinctly terminating near base of abdominal margin; the second crossing anterior wings at apex of cell, and terminating on posterior wings a little beyond end of cell; a similar fascia commencing near costa of anterior wings, and more or less amalgamating at median nervules, with an oblique fascia crossing both wings, inwardly margined with a dark line commencing near apical angle of anterior wings where it is broadest, and terminating near anal angle of posterior wings where it is narrowest; on the outer margin of this fascia in both wings are a series of more or less obscure ocellated spots placed between the nervules; two submarginal lines as on upper surface, but inner one much waved and sinuated. In some specimens there are two distinct whitish spots on the underside of posterior wings, separated by the first subcostal nervule, the upper of which is largest. Body and legs more or less concolorous with wings. Expanse, ♂ ♀, 60–70 millim.” (*Distant, l. c.*)

“*Larva*. Cylindrical, dark brown, with dorsal and lateral rows of short delicate branched spines.

Pupa short, with tubercular points on dorsal segments, thorax broad.” (*Moore, l. c.*)

This species varies considerably in size, some of the Western Chinese specimens attain a wing-expansion of 80 millim., whilst a small race from Chang-yang, in Central China, measure only from 53–60 millim. On the upper surface the western specimens are rather brown in colour, but do not otherwise differ materially from Indian examples. On the under surface some specimens are strongly suffused and mottled with lilacine, whilst in others there is no trace of any such colour. The ocelli vary in number and definition. In many specimens there is a yellowish patch on the costal extremity of the central band of the secondaries.

Specimens of the small race from Chang-yang, Central China, are much paler on the upper surface; the outer margin of the primaries is much angulated, and the anal lobe unusually produced. Under surface paler in colour than the type; outer marginal area of primaries and apical area of secondaries whitish; transverse markings indistinct; ocelli faint or entirely absent; central band of secondaries narrow, sometimes with a yellowish patch on its costal extremity. Expanse 53–60 millim.

Widely distributed and abundant in Western China; it is also common at Chang-yang, Central China, India, Ceylon, Malay Peninsula, and New Guinea.

## Genus JUNONIA.

*Junonia*, Hübner, Verz. bek. Schmett. p. 34 (1816); Sect. I., Doubleday, Gen. Diurn. Lep. i. p. 206 (1849); de Nicéville, Butt. Ind. ii. p. 65 (1886).

“HEAD about equal in width to the thorax, thickly clothed with short hair-like scales.

“*Eyes* nearly round, rather prominent, smooth.

“*Palpi* porrect, ascending, clothed with scales, which are all short and appressed near the base, in part longer and hair-like towards the apex, the second joint with a dorsal tuft. First joint subcylindric, much curved, short; second joint fully three times the length of the first, stout, considerably swollen beyond the middle, then diminishing towards the apex, which is truncate; third joint much longer than the first, slender, elongate, conic, almost acicular.

“*Antennæ* about three fourths the length of the body, slender, terminating in a short, abrupt, obtuse club, grooved below.

“THORAX rather stout, oval.

“*Fore wing* nearly triangular; the apex more or less truncate, sometimes falcate. Costal margin sometimes but little curved, sometimes considerably arched; outer margin about two thirds the length of the costa, emarginate; inner margin equal in length to the outer, straight. Costal nervure rather strong, not extending beyond the middle of the costa; subcostal nervure emitting its first and second branches close together, a little before the end of the cell; the third at a point rather less than halfway between the origins of the second and fourth branches; this last nearer to the third than to the outer margin of the wing; the third terminating at the apex. Upper discocellular nervule very short; middle discocellular about equal in length to one third the width of the cell. Discoidal cell almost always open, the lower discocellular nervule almost entirely wanting. Third median nervule considerably curved.

“*Hind wing* rounded or angular; the anal angle often produced considerably. Costal margin not much curved; outer margin sinuate, more or less dentate, often produced into a tooth or short tail at the termination of the third median nervule. Precostal nervure mostly bifid. Costal nervure much curved near its origin. Discoidal nervule separating from the second subcostal soon after its origin. Discoidal cell always open. Third median nervule not much curved.

“*Fore legs* of the male slender, clothed with scales and delicate hairs; femur considerably longer than the tibia; tibia nearly cylindric, slightly slenderer towards the apex; tarsus one-jointed, nearly one half the length of the tibia; slender, subcylindric, sometimes tapering towards the apex, which is not unfrequently truncate. Of the female rather small; femur longer than the tibia; tibia subcylindric, smooth; tarsus as long as, or but little shorter than, the tibia; first joint cylindric, twice or three times the length of the rest combined, with a spine on each side at the apex, and sometimes a few scattered spines within; second joint scarcely one fifth, sometimes scarcely one seventh, of the length of the first; armed at the apex, as are the two following joints, with two spines; third, fourth, and fifth joints very short, transverse, the fourth the shortest, the fifth sometimes broader than the fourth; all, as is also the second, furnished with a tuft of hairs on each side at the base.

“*Middle and hind legs* moderately stout; femur of the former pair longer than, of the latter pair equal to, the tibiæ; tibiæ subcylindric, with two interno-lateral series of spines, and sometimes a few external spines; armed at the apex with two stout spurs; tarsi equal to the tibiæ, spiny laterally and below, except the fifth joint, which wants the lateral spines; the spines below somewhat in two series; the upper surface sometimes with one or two delicate spines or stiff hairs. First joint more than double the length of the second; this mostly equal to, but sometimes shorter than, the fifth, always longer than the third; fourth mostly shorter than the third. Claws curved, grooved below. Paronychial bilacinate, outer lacinia broad at the base, then very slender, pointed; equal, or nearly equal, in length to the claw, sometimes almost strap-shaped; inner lacinia short, subtriangular. Pulvillus shorter than the claw, two-jointed; second joint broad.

“*ABDOMEN* rather small, about two thirds the length of the inner margin of the wing.

“*LARVA* with the head and all the segments armed with spines. *Pupa* tuberculated, scarcely angular.” (*Doubleday, l. c.*)

### **Junonia orithya.** (Plate XXV. figs. 8–10.)

*Papilio orithya*, Linn. Syst. Nat. x. p. 473 (1758); Cramer, Pap. Exot. i. pl. xix. figs. C, D, ♀, pl. xxxii. figs. E, F, ♂ (1775), iv. pl. ccxc. figs. A, B, ♂ (1780).

*Cynthia orithya*, Donovan, Ins. China (new ed.), p. 64, pl. xxxv. fig. 2, ♀ (1842).

*Junonia orithya*, Hübner, Verz. bek. Schmett. p. 34 (1816); Butler, Cat. Fabr. Lep. B. M. p. 73 (1869); Moore, Lep. Ceyl. i. p. 41, pl. xxii. figs. 1 (♂), 1 a (♀), 1 b (larva & pupa) (1881).

*Junonia orithya*, Doubleday & Hewitson, Gen. Diurn. Lep. i. p. 209 (1849); Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 141, pl. v. figs. 5 (larva), 5 a (pupa) (1857); de Nicéville, Butt. Ind. ii. p. 73 (1886).

“*Male*. Upperside: fore wing dark blue-black from base to the disc, outer area fuliginous black; a purple-tinted ochreous-white short oblique subapical band, and two transverse submarginal narrow lunular fasciæ; on the inner fascia are two small red-ringed ocelli, below which the posterior angle is tinged with blue; costal edge ochreous white. Hind wing blue, suffused with purple; a black basal angular patch curving across the cell towards the anal angle, and merging into brown on the abdominal margin; two ocelli near the outer margin, the lower one red and ringed with black, the upper one almost black and blind; two pale-bordered marginal lines. Underside dull ochreous. Fore wing with three transverse basal ochreous-red bands bordered with black; a discal sinuous black fascia and pale outer lunular fasciæ; ocelli less distinct. Hind wing with narrow brown transverse sinuous lines and a brownish discal fascia; ocelli very pale and indistinct.

“*Female* differs on the upperside in having the basal half of the hind wing entirely black, both the ocelli being large and of a bright red.

“*Larva* dark purple-brown, each segment with short branched spines, two lateral rows of small yellow spots. Feeds on *Acanthads*.

“*Pupa* ochreous, speckled and lined with dark brown.” (*Moore, Lep. Ceyl.*)

The above description of the imago of *J. orithya* refers to the ordinary

form occurring in India and Ceylon. In China the species is represented by two distinct forms which are apparently separate broods. The form figured (Plate XXV. figs. 8 ♀, 10 ♂) is generally considered to be the typical one, and is figured by Donovan and Cramer. It is distinguished by the angulated contour of the outer margin of primaries and absence of all the ocelli on the purplish-brown under surface of secondaries and at apex of primaries.

The other form (Plate XXV. figs. 7 ♀, 9 ♂) is not angulated on outer margin of primaries; the ground-colour of under surface is much paler, and the ocelli are well defined. The female of this form has much less blue on all the wings, and there are three reddish bars in the discoidal cell of primaries. Some of the specimens of this form agree almost exactly with *ocyale*, Hübner, and *wallacei*, Distant\*, both of which are considered to be local races of *J. orithyia*.

Although I have examined hundreds of specimens of each of the forms figured in this work, I have not detected anything in the way of an intergrade connecting one form with the other. I am not inclined, however, to consider them distinct species, but simply regard them as well-defined (possibly seasonal) races of *J. orithyia*. In the North-west Himalayas *J. orithyia* is represented by a small pale form (*swinhoei*, Butler), but none of the Chinese specimens approach this form.

Mr. de Nicéville states that "specimens from Upper Burma, Cachar, and Assam are richly marked on the underside, and are almost identical with the typical *J. orithyia* from China, which Mr. Butler has already shown, in the Ann. & Mag. Nat. Hist. (5) xvi. p. 308 (1885), to extend to Siam."

Alphéraky (Rom. sur Léop. v. p. 114) records a specimen taken by Potanine in September near Joui-lin-gouan, Province of Kan-sou.

Widely distributed throughout India, Ceylon, Burma, China, the Malay Peninsula, Malacca, and Java. Specimens have been received by me from the Loochoo Islands and Formosa, but so far the species does not appear to occur in Japan; I am disposed, however, to think that it may yet be discovered in the Island of Kiushiu, which has been very little worked.

### **Junonia asterie.**

*Papilio asterie*, Linnæus, Syst. Nat. xii. p. 769 (1767); Cramer, Pap. Exot. i. pl. lviii. figs. D, E (1775).

\* Rhopal. Malay. p. 95, pl. xi. figs. 3, 4 (1883).

*Alcyoneis asterie*, Hübner, Verz. bek. Schmett. p. 35 (1816).

*Vanessa asterie*, Godart, Enc. Méth. ix. p. 321 (1819).

*Junonia asterie*, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 142, pl. v. figs.

(larva), 6 a (pupa) (1857); Moore, Lep. Ceyl. i. p. 43, pl. xxii. fig. 2 (1881); Distant, Rhop. Malay. p. 94, pl. xi. figs. 1, 2 (1882); de Nicéville, Butt. Ind. ii. p. 67 (1886).

“*Male and Female.* Wings above warm ochraceous, with the basal areas of both wings slightly infuscated, and with the following markings:—Fore wing with the costal area pale fuscous, and with an irregular fascia denoted by black margins crossing the middle of the cell, and a similar one with its internal area infuscated at end of the cell; this is followed by a somewhat similar but darker fascia, which terminates at base of the third median nervule, between which and apex is a subtriangular black patch, more or less enclosing two ocellated spots divided by the upper discoidal nervule; a large ocellated spot placed on the middle of the second and first median nervules, with a white centre and black outer margin; and a marginal and two submarginal black lines, the inner one of which is generally the palest, and the spaces between which are usually more or less infuscated. Hind wing with a very large ocellated spot purplish with two whitish inner spots, an outer black patch and yellow and black margins, the upper surface of which rests on the first subcostal nervule, and its posterior margin is situated between the discoidal and third median nervules; and a smaller one between the second and first median nervules, in some specimens the latter is practically obsolete; marginal and submarginal lines as on the fore wing, but the inner one darkest. Underside pale obscure ochraceous; the three basal costal fasciæ as on the upper-side of the fore wing, but their internal areas not infuscated, and the outer margin of the third continued in an oblique line across both wings, terminating near the anal angle of the hind wing, this line being inwardly and broadly margined with white; a slender, fuscous, irregularly rounded line at the base of the hind wing crossing the cell; ocellated spots as above, but paler, the larger discal spot on the hind wing being compressed, irregularly sub-ovate and bipupillate, the lower spot usually larger than above; marginal and submarginal lines as above, the inner terminating in a small black spot at the anal angle. Body and legs more or less concolorous with the wings. Expanse 48–58 millim.” (*Distant, l. c.*)

“*Larva* (figured by Horsfield from Java, where it feeds on a species of *Justicia*) is pale brown, the segments more or less marked with black, and bearing numerous many-branched spines. Head ochreous, the body with a dorsal line of the same colour. Pupa ochreous, marked and spotted with black, abdominal segments above the tubercular projections.” (*de Nicéville, l. c.*)

Occurs commonly at Wa-shan, Wa-ssu-kow, Pu-tsu-fong, and Chia-kou-ho in Western China, also at Chang-yang, Central China, and I have received specimens from Loochoo. Also recorded from Ningpo.

*Junonia asterie* has a very wide distribution. According to de Nicéville, it is found in India, Ceylon, Andaman and Nicobar Isles, Burma, Malay Peninsula, Siam, Malay Archipelago, Formosa, and Japan. Mr. Elwes (Proc. Zool. Soc. Lond. 1881, p. 896) mentions specimens in Pryer's collection from Shanghai.

I do not know of any authentic record of this species from Japan.

### **Junonia almana.**

*Papilio almana*, Linnæus, Syst. Nat. x. i. p. 472 (1758) ; Cramer, Pap. Exot. i. pl. lviii. figs. F, G (1775) ; Donovan, Ins. China, pl. xxxvi. fig. 2 (1798).

*Vanessa almana*, Godart, Enc. Méth. ix. p. 313 (1819).

*Junonia almana*, de Nicéville, Butt. Ind. ii. p. 68 (1886).

“*Male and Female.* May be known from *J. asterie* by the apex of the fore wing being usually much more truncate, the outer margin angled at the third median nervule, and the anal angle of the hind wing produced into a longer blunt-tipped tail. On the underside all the markings are less prominent, the discal ocelli very obscure, often obsolete. Expanse 2·1 to 2·6 inches.” (*de Nicéville, l. c.*)

The larva is said to feed on *Gloxinia* and *Osbeckia*.

Referring to the distribution of this species, Mr. de Nicéville says: “Occurs throughout continental and peninsular India, and in the outer Himalayas up to about 6000 feet elevation. It is not recorded from Ceylon or the Malay Peninsula, but is common through Assam, Sylhet, Cachar, Burma, and Upper Tenasserim. It occurs in the Andamans, in Java and China, and whenever met with is a common insect.”

I have received specimens of *J. almana* from the same Chinese localities as *J. asterie*, and quite agree with Mr. de Nicéville's suggestion that these may prove seasonal forms of one species. W. B. Pryer records specimens from the Snowy Valley, Ningpo.

### **Junonia hierta.**

*Papilio hierta*, Fabricius, Ent. Syst. Suppl. p. 424 (1798).

*Junonia hierta*, Swinhoe, Proc. Zool. Soc. Lond. 1884, p. 505 ; de Nicéville, Butt. Ind. ii. p. 71, pl. xx. fig. 94, ♂ ♀ (1886).

*Papilio ænone*, Cramer (nec Linnæus), Pap. Exot. i. pl. xxxv. figs. A, B, ♀, C, ♂ (1775).

*Cynthia ænone*, Donovan, Ins. China (new edition), p. 66, pl. xxxvi. fig. 1, ♂ (1842).

*Junonia ænone*, Hübner, Verz. bek. Schmett. p. 34 (1816) ; Moore, Lep. Ceyl. i. p. 42, pl. xxii. figs. 3 ♂, 3 ♀ (1881).

“*Male.* Upperside black. Fore wing with a broad medial ochreous patch, extending from the base to beyond the disc, and thence narrowed and bent downwards; two short paler ochreous streaks before the apex. Hind wing black, with a large broad subanal ochreous patch, and a large distinct blue subbasal spot.

“*Female.* Upperside dark ochreous brown, with the ochreous patch paler, shortened basally, and crossed by two black lines on middle of the cell, and a broader discocellular band; a black upper ocellus and a large lower discal ocellus. Hind wing with a very small upper and lower discal ocellus, and two marginal lunular ochreous lines.

“Underside [of both sexes]: fore wing pale ochreous brown; medial patch paler ochreous and suffused outwardly; crossed by black discoidal lines; two black discal spots. Hind wing with basal half greyish ochreous; discal area pale ochreous; crossed with brown lunular lines, a medial fascia, and discal row of small brown spots. Expanse 2 inches.” (*Moore, l. c.*)

This species is generally distributed in Western China, and occurs also at Chang-yang in Central China. None of the numerous specimens received showed any important differences from the type of the species.

According to de Nicéville (*l. c.*) *J. hierta* in India varies considerably according to the humidity or dryness of the atmospheric conditions under which it exists. It is distributed throughout India, Ceylon, and the Andamans to Burma.

### Genus SYMBRENTHIA.

*Symbrenthia*, Hübner, Verz. bek. Schmett. p. 43 (1816); de Nicéville, Butt. Ind. ii. p. 238 (1886).

*Laogona*, Boisduval, Sp. Gén. i. pl. x. fig. 3 (1836); Doubleday, Gen. Diurn. Lep. i. p. 190 (1848).

“HEAD of moderate width, hairy.

“Eyes oval, not remarkably prominent, hairy.

“Palpi ascending, projecting beyond the forehead, clothed with long scales, rather closely appressed, except at the back of the second joint towards the apex: first joint short, subcylindric, curved, two fifths the length of the second joint; second joint cylindric, scarcely curved, subtruncate at the apex; third joint elongate, conical, rather shorter than the first joint.

“Antennæ about three fourths the length of the body, terminating in a rather short obtuse club.

“THORAX oval, stout, hairy; abdomen about two thirds the length of the inner margin of the hind wing.

“Fore wing nearly triangular, the apex very slightly truncate, costal margin but little curved, outer margin about three fourths the length of the costal, slightly emarginate, inner margin nearly straight, equal to the outer; costal nervure rather stout, extending beyond the middle of the wing; subcostal nervure five-branched, its first branch thrown off considerably beyond the middle, its second shortly before the end of the cell, the third at a greater distance from the origin of the second than from that of the fourth, this last nearer to the apex than to the origin of the third; upper discocellular nervule very short, middle discocellular much curved, about half the length of the lower, which is nearly straight, and anastomoses with the third median nervule where this last makes a slight angle.

“Hind wing angular, the base with a rather prominent shoulder; costal margin curved, outer margin curved as far as the third median nervule, then produced into a short tooth, thence sinuate to the anal angle, all the margins of about equal length; præcostal nervure bifid; discoidal nervule separating from the second subcostal close to its origin; discoidal cell open; third median nervule scarcely curved.

“*Fore legs* of the male with the femur scaly; the tibia except at the base, and the tarsus, densely clothed with very long hairs, femur longer than the tibia, tibia and tarsus equal in length, the former slenderer at the base than at the apex, the latter cylindric, scarcely curved, rounded at the base and apex. Of the female with the femur, tibia, and tarsus scaly, and furnished with long delicate hairs, least numerous on the tarsus; tibia much shorter than the femur, equal in length to the tarsus; tarsus four-jointed, the first joint cylindric, spiny below, the spines small, the apex unarmed, second joint about one fourth the length of the first, armed with a few small spines below, and two stronger ones at the apex, third and fourth joints combined scarcely longer than the second, both armed with two spines at the apex, those of the fourth having a tuft of hair at the base.

“*Middle and hind legs* with the tibiæ and tarsi of equal length, shorter than the femora, which are rather short; tibia spiny within except at the base, the spines short, slender, arranged in two nearly regular series; tarsi spiny below and at the sides, except the fifth joint, which wants the lateral series of spines; spines of the lower surface in two somewhat regular series; first joint longer than the rest combined, second joint less than one third the length of the first, third joint rather more than half the length of the second, longer than the fourth, fifth joint longer than the second; claws short, curved, grooved below; paronychia bilacinate, outer lacinia slender, pointed, as long as the claw, inner lacinia shorter, slender, pointed; pulvillus jointed, shorter than the claws.” (*Doubleday, l. c.*)

### **Symbrenthia hippoclus.**

*Papilio hippoclus*, Cramer, Pap. Exot. iii. p. 46, pl. ccxx. figs. C, D, ♂ (1779).

*Symbrenthia hippoclus*, de Nicéville, Journal Asiat. Soc. Beng. li. pt. 2, p. 57 (1882); Butt. Ind. ii. p. 240 (1886).

*Papilio lucina*, Cramer, Pap. Exot. iv. pl. ccxxx. figs. E, F, ♀ (1780).

*Symbrenthia daruka*, Moore, Proc. Zool. Soc. Lond. 1874, p. 570, pl. lxvi. fig. 10.

“*Male*. Upperside: both wings black, with pale fulvous markings. Fore wing with a broad discoidal streak, its upper edge indented before and at the end of the cell, its lower edge irregular, extending beyond and below the cell; a subapical oblique streak, often divided into two portions, the lower the smaller, sometimes coalescing with the discoidal streak, with a small spot beyond; a broad oblique discal band from the second median interspace to the inner margin. Hind wing with the discal band in continuation of that on the fore wing, suddenly widening out at the abdominal fold, a broad patch on the costa between the termination of the discal band and the base of the wing, a submarginal broad band gradually attenuating to the outer angle, a fine marginal more or less interrupted line. Underside: both wings pale fulvous, marked with dark ferruginous short streaks and spots almost throughout, which assume the form of a somewhat conspicuous discal band, with a small violet spot placed outwardly against it in the second median interspace, and another within it in the submedian interspace of the fore wing. Hind wing more or less irrorated with pale violet from the abdominal margin and towards the anal angle, some bluish metallic submarginal lunules from the discoidal nervule to the anal angle, most distinct in the second median interspace.

“*Female* larger, all the markings larger and paler, as is also the ground-colour of the under surface, where all the markings are clearer and better defined.” (*de Nicéville, l. c.*)



Occurs at Ichang in Central China, and is generally distributed throughout Western China, where it is far more common than *S. asthala*. There is some variation in the width of the yellow markings, and one or two specimens approach the form to which Mr. Moore has given the name of *daruka*.

De Nicéville (*l. c.*) states that in India "*S. hippoclus* is the widest spread species of the genus, and the most abundant in individuals where met with. It occurs in India throughout the Himalayas and Assam to Upper Tenasserim, and again in the Eastern Ghâts."

### **Symbrenthia asthala.** (Plate XXV. fig. 2, ♂.)

*Symbrenthia asthala*, Moore, Proc. Zool. Soc. Loud. 1874, p. 269, pl. xliii. fig. 9, ♂ ; Doherty, Journ. A. S. B. lv. pt. 2, p. 122 (1886) ; de Nicéville, Butt. Ind. ii. p. 244, pl. xxiii. fig. 106, ♂ (1886).

"*Male.* Differs from *S. hypselis* in being much smaller. On the upperside the bands are of the same orange-red colour, but of a different shape and broader, the oblique subapical streak of fore wing being lengthened and extending nearly across the apex. On the underside the colour is nearly uniform orange-yellow, the tessellations somewhat different, and the submarginal band composed of imperfectly formed conical lunules, partly dashed with metallic green ; lunules from anal angle to tail similar to those in *S. hypselis.*" (*Moore, l. c.*)

"*Female.* Differs from the male in the red markings on the upperside being paler, the apical band of fore wing wider and longer, extending from the extreme costa almost to the outer margin, approaching the discoidal band, remote from the lower band, having a deep sinus on its lower side and a streak given out upwardly from its outer end. Lower band broad, its upper part clavate, displaced outwardly above the lower median nervule ; discoidal band irregular, heavy, its end produced below the middle median nervule. Lower band of hind wing extends only to the second subcostal nervule, with only a trace of a submarginal line beyond it. Underside nearly uniform orange-tawny, the base of both wings and costa of fore wing paler ochreous." (*Doherty, l. c.*)

Occurs at Chang-yang and Ichang in Central China, and at Chia-kou-ho in Western China. It is on the wing from June to September.

According to de Nicéville (*l. c.*) *S. asthala* is confined to the North-west Himalayas. It seems curious that this species should be found in China and the N.W. Himalayas, and yet should not occur in Sikkim, where it is replaced by a close ally, *S. hypselis*, Godart.

**Fam. LEMONIIDÆ.**Subfam. *LIBYTHÆINÆ*.Genus *LIBYTHERA*.

*Libythea*, Fabricius, Illiger's Magazin, vi. p. 284 (1807); Westwood, Gen. Diurn. Lep. ii. p. 412 (1852); de Nicéville, Butt. Ind. ii. p. 300 (1886).

“**BODY** robust, thickly clothed with soft woolly hairs, rather small in size, and of dark colours; the wings with spots of orange, or dirty white, but not ocellated.

“**HEAD** small, strongly tufted in front.

“*Eyes* prominent, naked.

“*Labial palpi* extraordinarily elongated, being one third, or even in some species half, the length of the whole body; porrected horizontally, not compressed, thickly clothed with hairs of moderate length, the inner edges uniting together, so as to form conjointly a long conical beak, obtuse at the tip; second joint oval; third joint greatly elongated and slender.

“*Antennæ* not nearly half the length of the fore wings, straight, articulation indistinct, gradually thickening from the base to the tip, which is obtuse.

“**THORAX** oval, hairy; tippets strongly developed.

“*Fore wings* of moderate size. Costal margin moderately arched; apex acute. Apical margin strongly angulated below the apex; the lower discoidal vein extending into the most prominent part of the angle, about five sixths of the length of the costal margin. Inner margin straight, one fourth longer than the apical margin. None of the veins dilated at the base. Costal vein extending to about half the length of the costa. Postcostal vein with the first and second branches free, arising before the anterior extremity of the discoidal cell; third branch arising far beyond the cell, followed at a short distance by the fourth, which extends to the tip of the wing. Upper discocellular vein very minute and suboblique; middle and lower ones of nearly equal length, very slender, and uniting into a curve, closing the discoidal cell about the middle of the wing, by uniting with the third branch of the median vein at about the same distance from its base as exists between the first and second branches.

“*Hind wings* irregularly and broadly ovate. The costal margin produced in the middle into a considerable-sized lobe. Outer margin strongly scalloped. Anal margin forming only a slight gutter for the reception of the abdomen. Precoastal vein short, curved outwards. Costal vein extending to the outer edge of the lobe, of which it follows the outline. Postcostal vein arising just opposite to the precoastal, branching at a considerable distance from its base. Upper discocellular vein rather short, almost transverse, arising at a distance from the base of the postcostal branch about equal to the space between the base of the postcostal and its branch. Lower discocellular slender but distinct, more oblique than the upper discocellular and slightly curved, closing the discoidal cell by its union with the third

branch of the median vein at a very short distance from its origin; this third branch considerably curved after its union with the lower discocellular vein.

“*Fore legs* of the male small and brush-like, densely hairy. The tarsus rather shorter than the tibia, cylindrical, exarticulate, and destitute of unguis. Fore legs of the female considerably longer than those of the male, but articulated like the four hind feet. The tarsus armed with short spines beneath. The unguis curved, dilated at the base, horny, acute at the tips. Paronychia slender, membranous, bifid, finely setose; the outer division acute, the inner one shorter and more triangular. Pulvillus broadly transverse, the base narrowed.

“*Four hind legs* moderately elongated, thickly clothed with scales. Femur hairy beneath. Tibia and tarsus armed beneath with short spines. Unguis and their appendages formed exactly as in the fore legs of the female.

“*ABDOMEN* small, slender.” (*Westwood, l. c.*)

### **Libythea myrrha.**

*Libythea myrrha*, Godart, Enc. Méth. ix. p. 171 (1819); Boisduval, Sp. Gén. i. pl. x. fig. 8 (1836); Gray, Lep. Ins. Nepal, p. 15, pl. xii. fig. 4 (1846); de Nicéville, Butt. Ind. ii. p. 302 (1886).

“*Male*. Upperside: both wings deep vinous-brown, almost black, with tawny markings. Fore wing with a streak commencing narrowly at the base of the wing, occupying the lower half of the discoidal cell and upper half of the submedian interspace, extending beyond the cell to near the outer margin of the wing and occupying the entire width of the first median interspace and the lower portion of the interspace above; the streak outwardly broadly rounded, and widest at the end of the cell; two subapical somewhat whitish spots placed obliquely, sometimes quite separated, sometimes joined into a band, each spot sometimes almost divided into two by the veins, sometimes with a small diffused whitish spot at the extreme apex of the wing. Hind wing with a broad discal band, wide and diffused at the abdominal margin, elsewhere well defined, and gradually narrowing towards the apex of the wing, which it does not quite reach, its apical extremity curved and deflected towards the outer margin. Underside much paler. Fore wing with the tawny markings as above but paler, the discal streak wider, occupying almost the entire basal area of the cell, the apex irrorated with purplish. Hind wing with no tawny discal band, except as far as visible by transparency, irrorated throughout with purplish, which assumes the form of a more or less distinct band across the disc, and another from the middle of the costa to the middle of the cell, the whole wing thickly striated with dark brown.

“*Female*. Paler throughout, the tawny markings larger. Cilia throughout ochreous-brown; antennæ, palpi, and body vinous-brown above, paler below.

“*Expanse* 2·0 to 2·2 inches.

“In the outer Himalayas *L. myrrha* is rare in the west, but much commoner to the east, generally frequenting streams, and often settling (as does also *L. lepita*) at the end of a dead stick with folded wings, in which position it exactly resembles a dead leaf.” (*de Nicéville, l. c.*)

I received one example of this species from Moupin, Western China, where it was captured in June.

### **Libythea lepita.**

*Libythea lepita*, Moore, Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 240 (1857); de Nicéville, Butt. Ind. ii. p. 303 (1886); Pryer, Rhop. Nihon. p. 21, pl. v. fig. 13 (1887).

“Differs from *Libythea myrrha* in the ferruginous streak from base of fore wing being divided into two portions, the first being within the discoidal cell, the second a round terminal spot beyond its extremity.” (*Moore, l. c.*)

“Not infrequently the terminal spot is joined to the discoidal streak, but the upper and lower edges of this combined streak are always highly irregular, the cell portion being shaped just like a tent-peg, while the streak in *L. myrrha* is continuous, with even edges, so there is no difficulty in distinguishing them. Mr. Doherty remarks that ‘the prehensores are quite different from those of *L. myrrha*, from which species it seems perfectly distinct.’” (*de Nicéville, l. c.*)

Occurs at Wa-ssu-kow, Western China, in June, and at Chang-yang, Central China, in June and July. The specimens from Western China are of a deeper and richer colour, and the fulvous markings are narrower than in typical examples. I met with *L. lepita* in the mountains near Oiwake, Japan, in September; and Pryer (*l. c.*) says:—“There is only one brood of this butterfly. It is the longest lived, in the perfect state, of any of the Lepidoptera. It emerges from the pupa early in July, and lives until the following May. It retires to its hybernaculum soon after its emergence, and remains quiescent until the following March, when it is awakened by the first warm day, and may then be seen depositing its eggs on the unopened buds of the *Celtis*. The pupa is suspended by the tail after the manner of a *Vanessa*. It varies considerably in markings and size.”

According to de Nicéville, this species occurs throughout the outer ranges of the Himalayas at moderate elevations. I met with it myself in Southern Kashmir in October, where it was common, and large numbers were frequently seen congregated together in wet places on the paths.

*L. lepita* is exceedingly close to *L. celtis* of Southern Europe, and may be the eastern form of that species. The larva of *L. celtis* is described by Dr. Lang (Butt. Eur. p. 152, pl. xxxii. fig. 2) as green with a dark dorsal stripe, black spiracles, and purplish lateral stripe; it feeds on *Celtis australis*.

Subfam. *NEMEOBIINÆ*.

## Genus ZEMEROS.

*Zemerus*, Boisduval, Sp. Gén. i. pl. xxi. fig. 5 (1836); Westwood, Gen. Diurn. Lep. ii. p. 418 (1851); de Nicéville, Butt. Ind. ii. p. 307 (1886).

“BODY small, slender; wings large, irregular along the margins; disc marked with a number of small white dots.

“HEAD small, very finely hairy; front with a small truncated tuft.

“Eyes small, naked.

“Labial palpi very minute, almost horizontal, not visible from above; the tip not reaching more than the level of one fourth of the height of the eyes, rather thickly clothed beneath with hairs; the terminal joint not being visible, except on denuding the palpus.

“Antennæ short, and very slender, not more than half the length of the fore wings; terminated by a short but distinct club, rather slender, obtuse at the tip; annulations very short, and finely ringed with white at the tip.

“THORAX rather large, oval; tippets truncate in front, finely hairy.

“Fore wings large, broadly triangular. Fore margin slightly arched; apical angle slightly acute in the males, more obtuse in the females. Apical margin irregularly scalloped, being more convex in the females than in the males. Inner margin not so long as the apical. Veins arranged as in *Eurybia*, except that the lower discocellular vein is united to the third branch of the median vein quite close to its origin.

“Hind wings irregularly oval. The apical margin irregularly scalloped, and somewhat truncate from the anal angle to the extremity of the third branch of the median vein. Costal vein not extending beyond the middle of the costa. Postcostal vein arising near the body, but curved at its base, being deflexed opposite the precostal vein; branching at a considerable distance from the base, the branch extending to the upper end of the first or outer scallop. Upper discocellular vein short, arising a little nearer the body than the branch of the postcostal, oblique; lower discocellular oblique, slightly longer than the upper, uniting with the median vein exactly opposite the base of the third branch, which extends to the strongest of the angles formed by the scallops of the margin. Anal margin of the wing forming a very slight gutter for the reception of the abdomen.

“Fore legs of the male very small, and densely clothed with hairs; tarsus simple. Of the female more than twice the length of those of the male, slender, but well clothed with scales, so as to conceal the joints of the tarsus, which is about equal in length to the tibia, and is terminated by two small, distinct, very slender claws.

“Four hind legs slender, and rather short, clothed with fine scales. Femur of the middle pair considerably elongated, being as long as the tibia and half the tarsus. Tarsus of the hind pair rather longer than the tibia. Tibial spurs very slender, short, and acute. Tarsi armed beneath with very fine, short, acute setæ.

“ABDOMEN small, slender, scarcely more than half the length of the hind wings.” (*Westwood, l. c.*)

**Zemerus flegyas.**

*Papilio flegyas*, Cramer, Pap. Exot. iii. pl. cclxxx. figs. E, F (1780).

*Zemerus flegyas*, Doubleday, Hewitson, Gen. Diurn. Lep. ii. p. 419, pl. lxi. fig. 5 (1851); de Nicéville, Butt. Ind. ii. p. 308, pl. xxiv. fig. 115, ♂ (1886).

“*Male*. Upperside: both wings rich maroon; each interspace bearing a black streak reaching nearly to the margin, twice interrupted, and each of the sections into which it is divided marked by a white spot at its outer end, those of the inner and outer sections prominent, sharply defined with black, those of the middle section obscure; the submedian interspace bearing two such streaks; the outer white spots forming a regular submarginal series, the inner spots forming an irregular series on the middle of the wing, of which that on the upper median interspace is out of line, being much nearer the margin. Fore wing with a small white spot in the middle of the cell, and a longer one below it in the submedian interspace. Hind wing with a white streak in the cell, and one or two white spots below it. Underside paler, all the markings clearer, the black streaks much reduced, the apices of the marginal series marked with pale ochreous. Hind wing with some small basal white spots. Cilia throughout black, marked with white on the interspaces.

“*Female* paler, all the markings less distinct, the white spots sullied. -

“Expanse 1·5 to 1·8 inch.” (*de Nicéville, l. c.*)

Appears to be common and well distributed in Western China, and also occurs at Chang-yang and Ichang, Central China. Mr. W. B. Pryer records it from the Snowy Valley, near Ningpo. According to de Nicéville this is a widely distributed species in India, “occurring in the Himalayas from Masuri eastwards as far as Upper Assam, in Sylhet, Cachar, and Tenasserim, reappearing in Java.”

## Genus DODONA.

*Dodona*, Hewitson, Exot. Butt. ii. p. 91 (1861); de Nicéville, Butt. Ind. ii. p. 309 (1886).

“Resembles *Nemobius* and *Melitara* in colouring, with the hind wing of the male protruded at the anal angle; the antennæ distinctly clubbed.” (*Hewitson, l. c.*)

“In neuration *Dodona* differs only from *Zemerus* in the lower discocellular nervule of the hind wing joining the median nervule some little distance beyond the point where the second median nervule is given off. Fore wing evenly triangular; the inner margin being usually equal in length to the outer; the costa very slightly arched; the outer margin even, sometimes slightly convex, sometimes almost straight, sometimes slightly concave. Hind wing with the outer margin usually more or less scalloped, sometimes quite even, sometimes angled at the end of the third median nervule; the anal angle always produced into a lobe, often with a long fine tail at the end of the submedian nervule. Palpi variable, usually much longer than in *Zemerus*; antennæ with a distinct oval club. Sexes generally alike.” (*de Nicéville, l. c.*)

**Dodona durga.** (Plate XXVIII. fig. 3, var.)

*Melitea durga*, Kollar, Hügel's Kaschmir, iv. pt. ii. p. 441, pl. xiii. figs. 3, 4 (1848).

*Taxila durga*, Westwood, Gen. Diurn. Lep. ii. p. 422 (1851).

*Dodona durga*, de Nicéville, Butt. Ind. ii. p. 310 (1886).

“*Male*. Upperside: both wings fuscous, with numerous ochreous spots. Fore wing with a streak across the cell, continued to the submedian nervure, another at its end, a larger one beyond from the costa to the third median nervure, two spots near the bases of the median interspaces, another in the submedian interspace beyond the lower of these two latter spots, two pairs of spots below the costa divided by the subcostal nervure, a pair of spots placed beneath and between them divided by the lower discoidal nervule, another pair placed outwardly and beneath these latter divided by the second median nervule, another pair at the anal angle divided by the submedian nervure, five linear spots on the margin from the upper discoidal nervule to the submedian nervure. Hind wing with the discocellulars marked with an ochreous line, an irregular discal series of spots, a submarginal and marginal linear series which coalesce above the anal lobe. Underside: both wings dark ochreous. Fore wing with the base and inner margin fuscous, the base of the costa ochreous, also the base of the cell enclosing a black spot, other markings as above, except that the outer spots especially towards the anal angle are of a deep orange. Hind wing with all the veins more or less ochreous on the basal half, a short basal ochreous streak from the costa, another subbasal from the costa to the submedian fold, where it meets a fine ochreous line defining the fold, the latter joined at the base to another fine line on the submedian nervure, a short ochreous bar defining the discocellular nervules; a somewhat broad ochreous band from the second median nervule to the submedian nervure above the anal lobe, then recurved and continued at the abdominal margin to the base of the wing, inwardly defined with black, the extreme edge of the abdominal margin ochreous, two short bands on the costa, the inner one defined with black, with another placed beneath and between them from the second subcostal to the second median nervule, the submarginal macular band as above but widened out anteriorly and enclosing two black spots divided by the discoidal nervule, marginal band as above, the anal lobe and a spot beyond black crowned with orange. Cilia white, tipped with black at the ends of the veins throughout.

“*Female* larger, wings broader, outer margin of fore wing more convex, apex less produced, markings similar throughout.

“Expanse 1·4 to 1·8 inch.” (*de Nicéville, l. c.*)

The Chinese form of this species (Plate XXVIII. fig. 3, ♂) is larger; the markings are fulvous, and those on the primaries are rather broader. On the under surface the markings of primaries are also broader and pale fulvous in colour; the secondaries are chocolate-brown and this colour causes the white markings to assume greater prominence.

Common and generally distributed in Western China, and is on the wing from May to July at elevations ranging from 5000 to 10,000 feet.

According to de Nicéville, *D. durga* is very common all over the Western Himalayas as far west as Murree and Kashmir, and in the east occurs in Kumaon up to 8000 feet.

**Dodona ouida.**

*Dodona ouida*, Moore, Proc. Zool. Soc. Lond. 1865, p. 771; Hewitson, Exot. Butt. iii. (*Dodona*) pl. i. figs. 4, 5, ♂, 6, ♀ (1866); de Nicéville, Butt. Ind. ii. p. 311 (1886).  
*Taxila erato*, Boisduval, MS., Horsfield & Moore, Cat. Lep. Mus. E. I. C. i. p. 243 (1857).

“*Male*. Upperside brownish black: fore wing with three transverse discal equidistant ferruginous bands, the medial one broadest, the first two oblique; two white dots at apex: hind wing with transverse discal and two narrow marginal ferruginous bands; anal lobe with a white bar and border. Underside dark ferruginous: fore wing with the transverse bands less defined, yellow, terminating on the costal margin in white spots; two apical white spots: hind wing with bluish basal and purplish medial transverse discal interrupted bands, the latter with an inner border of brown, each having a white spot on the costal margin, that of the latter with a black inner border; two narrow marginal brown bands, two black purple-bordered dots at anterior angle, and black and white lines bordering the black lobe.

“*Female*. Dull fuliginous brown, somewhat black apically: fore wing with medial broad transverse discal oblique white band, and an outer or submarginal narrow interrupted ferruginous-white line; two apical dots white: hind wing with two marginal pale brown lines, terminated at the anterior angle with two pale-bordered black spots; anal lobe black. Underside as in male.

“Expanse  $1\frac{3}{4}$  inch.” (*Moore, l. c.*)

Occurs at Moupin and Omei-shan, Western China.

In Chinese specimens the central band on primaries of the male is broader than in Sikkim examples.

Mr. de Nicéville states that this is a widely distributed species in the outer Himalayas, and occurs eastwards to Upper Assam.

**Dodona eugenes.** (Plate XXVIII. fig. 1, var.)

*Dodona eugenes*, Bates, Journ. Linn. Soc., Zool. p. 371 (1867); de Nicéville, Butt. Ind. ii. p. 315 (1886).

*Dodona maculosa*, Lecch, Entomologist, xxiii. p. 44 (1890).

“*Male*. Closely allied to *D. egeon*. Wings of the same shape, and the form of the tail of the hind wing the same. Upperside dark, blackish brown. Fore wing with a narrow line across the middle (touching neither the costa nor the hind margin), a curved streak near the hind angle, and about thirteen small spots pretty equally distributed over the apical half of the wing; all these marks are whitish, except the transverse line and marks near the hind angle, which are slightly tinted with reddish tawny. Hind wing with the outer portion traversed by four indistinct brownish tawny lines, converging from the costa towards the anal angle; at the apex are two black spots edged with light brown. On the broad square lobe at the anal angle is a quadrate black spot, a slender tail arising from its outer edge. Underside: the wings are precisely similar to those of *D. egeon*, being tawny brown, with stripes and spots of white, silky and shining on the hind wing and costa of fore wing.



“This species seems to have been confounded hitherto with *D. egeon*; but the very different colour and small dimensions of the stripes and spots of the upperside well distinguish it.” (*Bates, l. c.*)

Var. **maculosa**, Leech. (Plate XXVIII. fig. 1, ♂.) *Male*. Differs from typical *D. eugenes* in its much larger size, the markings of primaries are all bright fulvous with the exception of the apical spots, which are white. The markings of secondaries are also more conspicuous. The under surface is also much more brilliantly coloured, and the majority of the markings are fulvous instead of white. *Female*. Similar to the male but the markings are paler and less interrupted. Expanse, ♂ 39–46 millim., ♀ 42–52 millim.

This form is commonly distributed in Western China, and occurs at Chang-yang and Ichang in Central China, but the type does not seem to be represented.

In India *D. eugenes* occurs throughout the outer ranges of the Himalayas, and extends to Assam (*de Nicéville*). Mr. Elwes (Trans. Ent. Soc. Lond. 1888, p. 370) states that it is found in Sikkim from 6000 to 10,000 feet.

### Genus POLYCÆNA.

*Polycæna*, Staudinger, Stett. ent. Zeit. xvii. p. 227 (1886).

“Differs from *Nemeobius* in its more delicate structure; in the longer and somewhat differently shaped wings, and in having spots rather than bands on the upper surface. Primaries are convex on the outer margin, and the apex is obtuse. Secondaries are rounded on the outer margin with an obtuse angle about the middle in the male, and the anal angle is not acute as it is in *Nemeobius*. Precostal vein leaves the costal nervure at almost a right angle. Antennæ long and slender. Head, palpi, and thorax are clothed with longer hairs than in *Nemeobius*.” (*Staudinger, l. c.*)

### **Polycæna princeps.**

*Emesis princeps*, Oberthür, Etud. d'Entom. xi. p. 22, pl. vii. fig. 57 (1886).

“Le dessus est brun noir, avec une ligne marginale de taches intranervurales fauve rougeâtre, sauf les trois, vers le bord costal, qui sont chamois pâle et un second rang extracellulaire de taches également chamois pâle qui font toutes ressortir une ombre intérieure figurant un point très noir assez gros. La cellule est marquée d'un point noir intérieurement éclairé d'une tache chamois.

“Le dessous est jaune paille, un peu plus blanchâtre aux inférieures, avec des dessins et taches noires formant trois séries principales de lignes à peu près parallèles au bord extérieur. Une ligne jaune orangé submarginale, n'atteignant pas le bord costal des supérieures et reproduisant les taches fauve rougeâtre du dessus, sépare les deux derniers rangs de ces taches noires. Le rang le plus voisin de la base y est relié par des traits épais suivant le sens des nervures. Le dessous de l'abdomen est blanchâtre.

“Envoyé de Châpa par M. Biet.” (*Oberthür, l. c.*)

The sex of the specimen described by Oberthür is not mentioned, but from

the figure appears to represent a female. The male only differs from the female in the less rounded contour of the wings and the smaller size of the pale markings. This seems to be a very rare species; I have only received four specimens (3 ♂, 1 ♀), which were taken by a native collector on the high plateau to the north of Ta-chien-lu.

**Polycæna lama**, sp. nov. (Plate XXVIII. figs. 13 ♂, 15 ♀.)

*Male*. Similar on upper surface to *P. princeps*, Oberthür, but the submarginal band of reddish lunules broader and continued almost to costa of primaries.

*Female*. Agrees with the male except that all the markings are larger and tawny in colour; the discoidal cell of primaries is also suffused with tawny; there is a central series of white spots on the secondaries, this character is also usually present in the male.

Under surface of both sexes very like that of *P. princeps*, but there is a spot in the discoidal cell of secondaries instead of a streak along subcostal nervure; the female is tawny brown on primaries.

Expanse 37 millim.

The markings are subject to some variation in size and definition on both surfaces of the wings. The females exhibit considerable variation in the amount of brown on the upper surface. The wing-expansion given above is the average one, but some specimens are smaller and others, chiefly females, attain 40 millim.

I received the species from How-kow, Pu-tsu-fong, Wa-ssu-kow, and also in great numbers from the high plateau to the north of Ta-chien-lu. I have specimens which M. Grun-Grshimailo met with it in the Dshachar mountains in Eastern Thibet; these have the submarginal series of reddish lunules on all the wings fainter. He also obtained a new species of the genus (*P. lua*, Gr.-Gr.) in the Sinin-Schan mountains and met with *P. tamerlana* in the Boro-Koro mountains.

Thibet and the Western Chinese frontier appear to be the headquarters of the genus *Polycæna*.

**Polycæna matuta**, sp. nov. (Plate XXVIII. fig. 16, ♂.)

Blackish brown. Primaries with a tawny quadrate mark in the cell, followed by two bands of spots of the same colour; two apical spots and a submarginal series of lunules. Secondaries have a brownish mark at the base; a central band of tawny spots and a submarginal series of lunules of the same colour. Fringes are regularly chequered with white. Under surface: primaries tawny, suffused with blackish; discoidal spot, central and submarginal series, black; there is a white mark below apex: secondaries black with an abbreviated broad white band at the base; a white irregular central band and a tawny lunular submarginal band; this latter is

followed by a series of small white spots on the outer margin which are confluent with the white dashes in the black fringes.

Sexes alike, but the tawny marks on upperside of female are rather larger.

Expanse, ♂ 32 millim., ♀ 33 millim.

An example of each sex taken at an elevation of 10,000 feet in July by a native collector at Pu-tsu-fong and three males from the high plateau to the north of Ta-chien-lu. These last differ from the type, as described above, in being smaller and rather darker on the upper surface.

### Genus STIBOGES.

*Stiboges*, Butler, Proc. Zool. Soc. Lond. 1876, p. 308; de Nicéville, Butt. Ind. ii. p. 315 (1886).

“Allied to *Abisara*, aspect of *Nymphidium*. Wings with outer margin broad, costal nervure of fore wing terminating abruptly at about the middle of the costa, opposite to the end of the discoidal cell; subcostal nervure with five branches, the last two forking to apex; upper radial nervule emitted from the inferior margin of the subcostal near its origin\*; lower radial equally dividing the discocellulars, which are concave; second and third median nervules emitted near together; præcostal nervure of hind wing short, oblique, directed backwards; costal nervure short, straight, oblique, terminating at basal third of costa; subcostal nervure forking beyond the end of cell, the upper fork running close to the margin from the second third of costa; radial nervule emitted close to the subcostal, reducing the upper discocellular nervule to a point; lower discocellular long, oblique, nearly straight; second and third median nervules emitted nearer together than the first and second. Body slender; eyes prominent; antennæ slender, submoniliform; palpi very small.

“Type *Stiboges nymphidia*.” (Butler, *l. c.*)

“This diagnosis is evidently drawn up from a female specimen, though the sex is not stated. In the male the inner and outer margins of the fore wing are exactly equal in length, the latter is nearly straight, not strongly convex as in the female, and the apex very acute, not rounded. It has no secondary sexual characters. The hind wing is much less broad than in the female.” (de Nicéville, *l. c.*)

### **Stiboges nymphidia.**

*Stiboges nymphidia*, Butl. Proc. Zool. Soc. Lond. 1876, p. 309, pl. xxii. fig. 1, ♀; de Nicéville, Butt. Ind. ii. p. 316, pl. xxiv. fig. 119, ♀ (1886).

“Both wings semi-transparent, snow-white. Fore wing with broad costal and external dark brown borders, sinuated internally; two irregular submarginal series of unequal white spots. Hind wing with a broad dark brown outer border, undulated internally; a sinuated disco-submarginal lunulated pale brown line; a submarginal series of elongated white spots. Body

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\* “This is surely a mistake; the subcostal nervure originates from the base of the wing, the upper radial nervule has a common origin with the middle discocellular nervule (the upper discocellular is wanting in this genus) from a point on the subcostal nervure beyond the base of the second subcostal nervule.” (de Nicéville, *l. c.*)

dark brown. Underside as above. Cilia long, white, very broadly on the fore wing, less so on the hind wing, marked with dark brown at the ends of the veins. Legs, palpi, and venter white."

The above is Butler's description of *S. nymphidia*, as emended by de Nicéville.

Common at Moupin and Omei-shan, Western China, in July.

De Nicéville gives the distribution of this species as Penang, Naga and Khasi Hills, and Bhutan. There is a series from the latter locality in the collection of the late Otto Möller.

### Genus ABISARA.

*Abisara*, Felder, Wien. ent. Mon. iv. p. 397 (1860); Moore, Lep. Ceyl. i. p. 68 (1881); de Nicéville, Butt. Ind. ii. p. 319 (1886).

"Genus ab anglicis auctoribus cum *Taxila*, Doubleday (*T. fylla*, *durga*), confusum, capite minore, collari distincto, antennis gracilioribus palpisque brevioribus dignoscendum." (*Felder, l. c.*)

"Fore wing triangular; costal margin gently arched; outer margin straight or slightly convex; inner margin nearly straight, equal in length to the outer margin; apex pointed. Costal nervure short, reaching the middle of the wing; subcostal giving off its first and second branches close together before the end of the cell, the third nearer to the origin of the fourth than to the end of the cell, the fourth reaching the apex of the wing; discoidal cell broad, short, the discocellular nervules being emitted at less than half the length of the wing from the base; upper discocellular nervule wanting, middle and lower discocellulars of equal length, together forming a complete arch, and the lower joining the median nervure after the origin of the second median nervule; submedian nervure slightly sinuous. Hind wing subovate; costal margin strongly arched at the base, thence nearly straight; outer margin evenly rounded and slightly scalloped in the male, slightly angled at the termination of the third median nervule in the female (*A. fylla*), more strongly scalloped and produced into a long tail at termination of third median nervule (*A. neophron* and allies), or, least of all scalloped, but the wings strongly angled at the third median nervule (*A. echerius* and allies). Præcostal nervure simple, curved outwardly, costal nervure short, reaching the middle of the costa, the subcostal nervules bifurcating beyond the end of the cell, discoidal cell long and broad, the apex oblique, discocellular nervules of equal length in *A. echerius* and allies, the upper shorter than the lower in *A. fylla* and *A. neophron* and allies; the lower discocellular joining the median nervure after the origin of the second median nervule, almost in the same straight line in *A. fylla* and *A. neophron* and allies, but forming an obtuse angle with the middle one in *A. echerius* and allies. Body somewhat small, head small, eyes hairy, antennæ exactly half the length of the fore wing, distinctly annulated, with a distinct spatulate club, palpi minute." (*de Nicéville, l. c.*)

### **Abisara fylla.**

*Taxila fylla*, Doubleday, Hewitson, Gen. Diurn. Lep. ii. p. 422, pl. lxix. fig. 3, ♂ (1851).

*Abisara fylla*, de Nicéville, Butt. Ind. ii. p. 321 (1886).

“*Male*. Upperside: both wings and cilia dark brown. Fore wing with a straight even straw-yellow band commencing at the middle of the costa and almost reaching the inner angle, its lower portion narrower and slightly recurved; a pale brown submarginal line often bearing anteriorly two minute yellow spots divided by the fourth subcostal nervule, often with two additional spots near the margin divided by the fifth subcostal nervule, and the cilia beyond white. Hind wing with a pale brown curved discal band; a series of six marginal black spots inwardly defined with pale brown, and outwardly bearing a pure white dot, of which the two upper ones divided by the discoidal nervule are always largest, the next two divided by the second median nervule always smallest and often obsolete, the last two at the anal angle placed in the submedian interspace always present. There is sometimes a seventh small spot without a white dot between the subcostal nervules. Underside: both wings paler throughout, but similarly marked, except that the hind wing has a faint subbasal line.

“*Female*. Similarly marked to the male, but much paler, the discal band on the fore wing very variable in width and pure white or just tinted with palest yellow, and reaching the costa (in the male it does not reach it), wider anteriorly and tapering to a point posteriorly; the wing broader, apex less produced, outer margin convex. Body concolorous with the wings both above and below, the eyes with a pure white streak at the sides, the frontal tuft of the head also with a pure white streak on both sides; the palpi pale brown; the antennæ dark brown, annulated with white, the club with a white bar above near its tip.

“Expanse, ♂ 1·9 to 2·4; ♀ 2·0 to 2·5 inches.” (*de Nicéville, l. c.*)

Occurs at Moupin and Omei-shan, Western China, and at Ichang and Chang-yang, Central China.

In Chinese examples the central band on primaries is rather narrower than in typical specimens. According to de Nicéville, *A. fylla* occurs throughout the Himalayas, Assam, Sylhet, Upper Burma, Upper Tenasserim, and Yunan.









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